SERVICE MANUAL

Castle®

7600 Floor Loading Washer

GENERAL DESCRIPTION

INTRODUCTION

The Castle 7600 Floor Loading Washer is a fully automatic, floor loading washer designed to clean carts, utensils, wheelchairs, kick buckets, stretchers, I.V poles, and similar items found in hospitals and health care institutions.

Routine operation consists of loading the compartment, closing the door, and pressing a START push button. The Washer then performs the processing cycle and automatically shuts off when the cycle is complete. Following completion, the Unload End door is opened and the load removed.

Treatment solutions are delivered by means of an oscillating (back and forth) manifold equipped with spray nozzles. Automatic dispensing of detergent during the Wash phase and rinse aid during the Rinse 2 phase are standard features.

Processing cycles are controlled by means of a programmable controller equipped with a touch screen interface (Control Panel). Twenty cycle selections are possible. The operator needs only to select and start an appropriate cycle.

A standard cycle consists of the following sequential phases: Wash, Rinse 1, Rinse 2, Drying, and Exhaust. Any adjustments to a cycle's phase timing are made at the Washer's control panel.

The Washer may be installed in a shallow pit (Pit-Mounted) or installed at floor level (Floor Mounted Option). When installed in a pit, the floor of the Washer's chamber is the same level as the room floor allowing direct loading and unloading of carts. When installed at floor level, the floor of the chamber is higher than the room floor; ramps are then provided as standard equipment to facilitate loading and unloading.

The unit is available in five sizes - as determined by compartment length:

Model	Length
76001	64"(1626mm)
76002	72"(1829mm)
76003	80"(2032mm)
76004	98"(2489mm)
76005	112"(2845mm)

Useable width and height are standard for all five lengths: 36"(914mm) x 77"(1956mm).

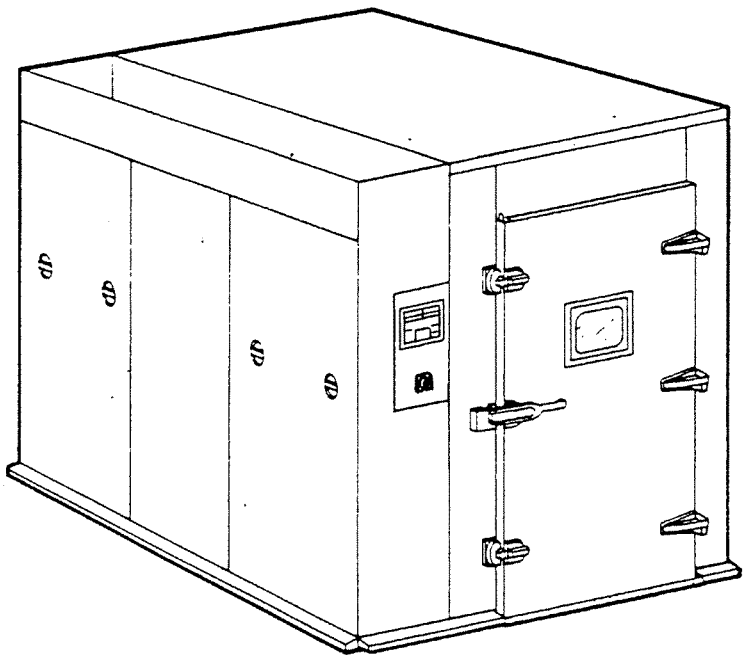


FIGURE 1-1: CASTLE 7600 FLOOR LOADING WASHER

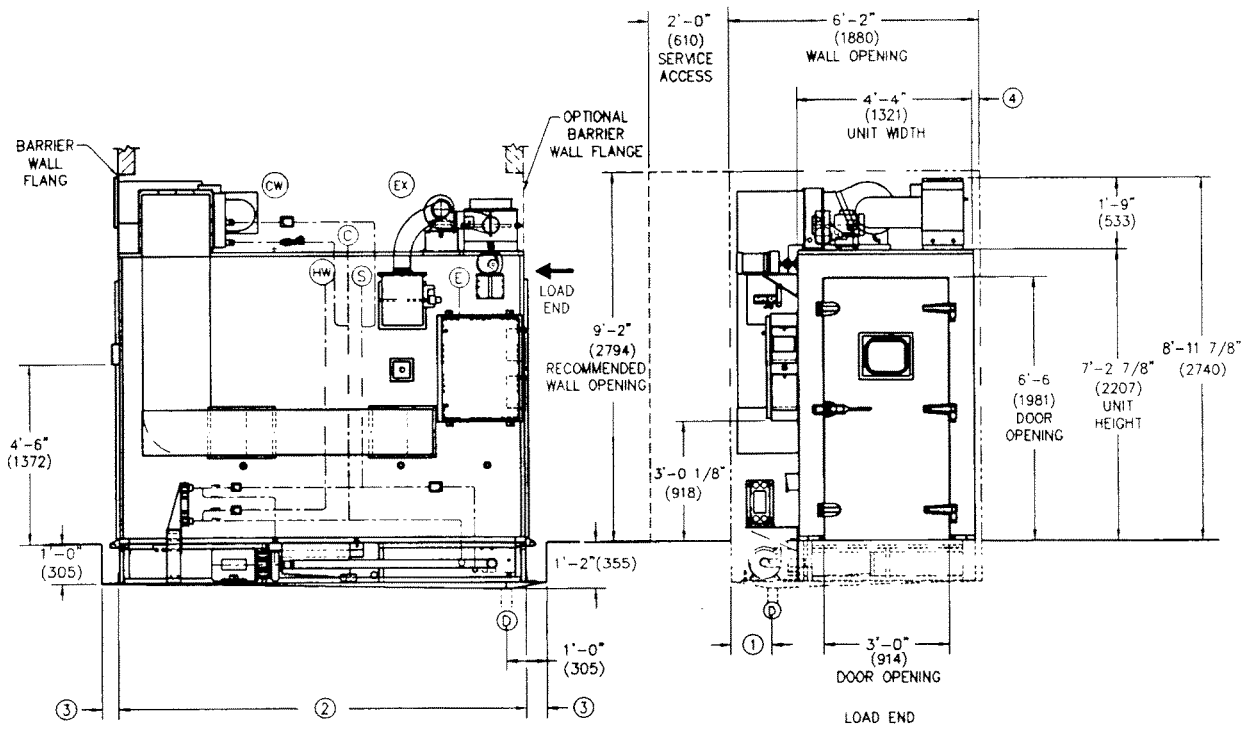
UTILITIES, SPECIFICATIONS, & MODEL ID

UTILITY	ON UNIT CONNECTION	PRESSURE RANGE STATIC	7600 DEMAND	7600 CONSUMPTION PER CYCLE
(S) = STEAM	1 1/2"(38) IPS	40-50 PSI.	480 LB/HR	76001 - 70 LBS/CYCLE 76002 - 77 LBS/CYCLE 76003 - 84 LBS/CYCLE 76004 - 86 LBS/CYCLE 76005 - 94 LBS/CYCLE
(CW) = COLD WATER	3/4"(19) IPS	40-60 PSI.	600 GAL/HR	100 GAL/CYCLE, VENTED UNIT 220 GAL/CYCLE, NON-VENTED
(EX) = EXHAUST SEE NOTE 6	12"x12"(305X305) FLANGED	800 CFM AT 1/4" NEGATIVE STATIC PRESSURE	NA	NA
(C) = CONDENSATE	3/4"(19) IPS	NA	NA	NA
(D) = DRAIN	3"(76) IPS	NA	NA	76001 - 235 GAL/CYCLE 76002 - 250 GAL/CYCLE 76003 - 265 GAL/CYCLE 76004 - 265 GAL/CYCLE 76005 - 295 GAL/CYCLE
(HW) = HOT WATER	1"(25) IPS	40-60 PSI.	780 GAL/HR	76001 - 135 GAL/CYCLE 76002 - 150 GAL/CYCLE 76003 - 165 GAL/CYCLE 76004 - 165 GAL/CYCLE 76005 - 195 GAL/CYCLE
(E) — ELECTRICAL - - - - - (PER VOLTAGE AVAILABLE) 208 V., 3 PH., 60 Hz., 5 WIRE w/ NEUTRAL & GROUND, 50 AMP SERVICE OR - 240 V., 3 PH., 60 Hz., 4 WIRE w/ GROUND, 50 AMP SERVICE OR - 480 V., 3 PH., 60 Hz., 4 WIRE w/ GROUND, 20 AMP SERVICE OR - 415 V., 3 PH., 50 Hz., 4 WIRE w/ GROUND, 25 AMP SERVICE (DISCONNECT BOX BY CUSTOMER) SEE NOTE 7				

	RADIANT HEAT LOSS - BTU/HR - VENTED UNIT				
	PASS THRU ONE WALL		PASS THRU TWO WALLS		
	CONTROL END	REMOTE END	CONTROL END	REMOTE END	RECESS AREA
76001 (64")	14000	9000	9000	9000	5000
76002 (72")	15000	9500	9500	9500	5500
76003 (80")	16000	10000	10000	10000	6000
76004 (98")	18000	11000	11000	11000	7000
76005 (112")	19000	11500	11500	11500	7500

	RADIANT HEAT LOSS - BTU/HR - NON VENTED UNIT				
	PASS THRU ONE WALL		PASS THRU TWO WALLS		
	CONTROL END	REMOTE END	CONTROL END	REMOTE END	RECESS AREA
76001 (64")	16000	10000	10000	10000	6000
76002 (72")	16000	10000	10000	10000	6000
76003 (80")	18000	10500	10500	10500	7500
76004 (98")	19000	11500	11500	11500	7500
76005 (112")	20000	12000	12000	12000	8000

NOTES:
1) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO INSURE BY USE OF PRESSURE REGULATORS OR OTHER MEANS THAT MAXIMUM SPECIFIED PRESSURES ARE NOT EXCEEDED. DYNAMIC PRESSURE IS MEASURED DURING FLOW CONDITIONS. STATIC PRESSURE IS MEASURED DURING SHUT-OFF CONDITIONS. STATIC PRESSURE SHALL NOT EXCEED 100 PSI FOR ANY SERVICE CONDITION AND MUST BE MEASURED AT POINT OF CONNECTION TO WASHER.
2) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO ELIMINATE WATER OR STEAM HAMMER CONDITIONS SHOULD THEY OCCUR IN THE SERVICE PIPING.
3) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO PROVIDE A PROPERLY SIZED AND LOCATED DRAINAGE SYSTEM IN ACCORDANCE WITH THE NATIONAL PLUMBING CODE. CONSIDER WHAT OTHER EQUIPMENT IS TIED TO DRAIN TO ELIMINATE SLOW DRAINAGE OR BACKUP. IF SITE CONDITIONS DICTATE THAT THE WASHER WILL DUMP WATER DIRECT TO PIT, THE PIT SHOULD BE WATER-PROOFED.
4) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO ENSURE THAT WATER SUPPLIES ARE PROPERLY PROTECTED FOR INTERNAL CROSS CONNECTION CONTROL IN ACCORDANCE WITH LOCAL BUILDING AND PLUMBING REQUIREMENTS.
5) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO PROVIDE A VENTING SYSTEM CAPABLE OF EXHAUSTING 800 CFM MEASURED AT THE POINT OF CONNECTION TO THE WASHER. THE SYSTEM SHOULD BE A DEDICATED, CORROSION PROOF & WATER TIGHT VENT. SLOPE VENT BACK TO WASHER.
6) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO COMPLETE ALL ELECTRICAL CONNECTIONS USING PROPERLY SIZED WIRING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
7) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO PROVIDE A FUSED DISCONNECT SWITCH IN ALL ELECTRICAL SUPPLY LINES AT THE WASHER LOCATION.
8) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO PROVIDE A PIT THAT MEETS ALL DIMENSIONAL REQUIREMENTS AS DIMENSIONED ON THIS DRAWING. PIT PADS SHOULD BE LEVEL FROM SIDE TO SIDE AND END TO END.
9) IT SHALL BE THE CUSTOMERS RESPONSIBILITY TO PROVIDE NON-SLIP FLOORING ON BOTH APPROACH RAMP AREAS.
10) ALL DIMENSIONS GIVEN ARE FROM FINISHED SURFACES.
11) ALL DIMENSIONS ARE FEET/INCHES (MILLIMETERS).
12) DRAWING NOT TO SCALE
13) THE UNIT SHOWN IS THE 76005 - 112" LONG CHAMBER.
14) CLEARANCE FOR BUILDING EGRESS MUST BE CHECKED. THE UNIT IS ALWAYS SHIPPED DISASSEMBLED. THE LARGEST SECTION IS THE SUMP BASE. SIZES: 76001= 14" x 65" x 79"
76002= 14" x 65" x 87"
76003= 14" x 65" x 95"
76004= 14" x 65" x 113"
76005= 14" x 65" x 127"

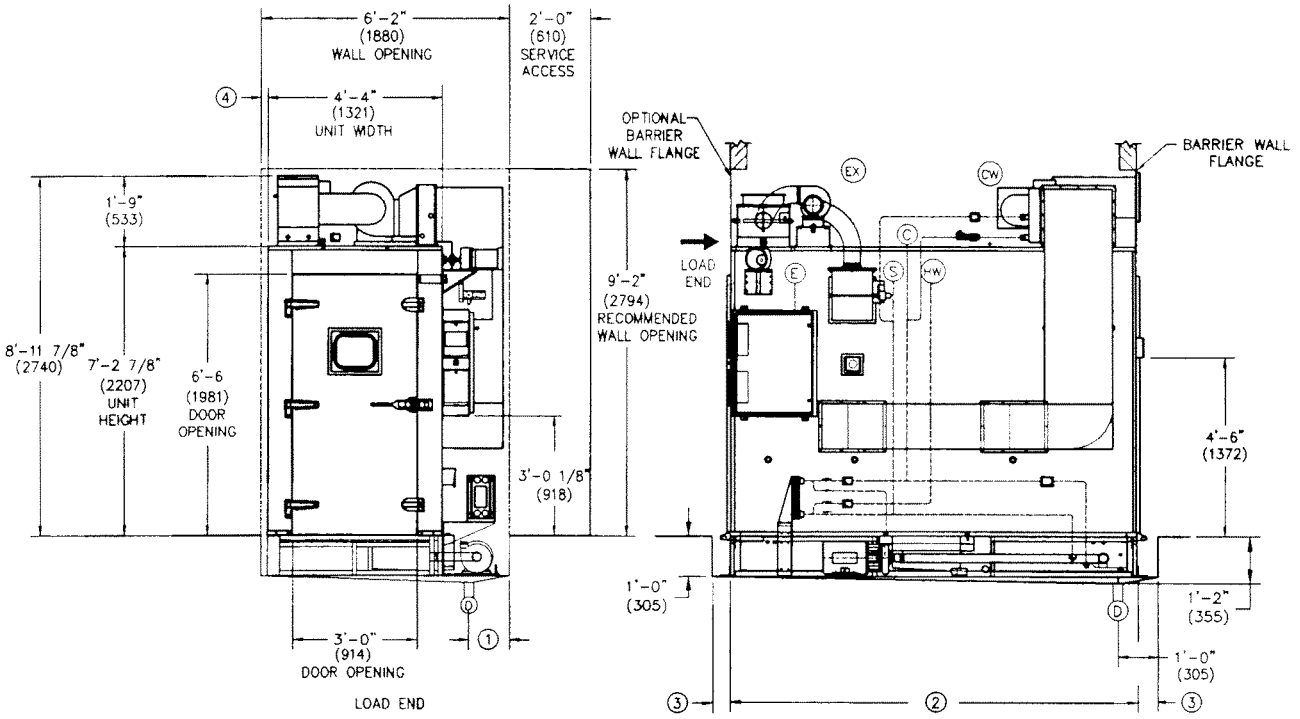


MODEL IDENTIFICATION

The rating plate for a 7600 Washer is affixed to the outside of the control box door. Information on this plate includes an individual unit's model type, serial number, power requirements, and other specifications.

	76001 – 64" CHAMBER		76002 – 72" CHAMBER		76003 – 80" CHAMBER		76004 – 98" CHAMBER		76005 – 112" CHAMBER	
	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC
①	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)
②	6'-0" (1829)		6'-8" (2032)		7'-4" (2235)		8'-10" (2692)		10'-0" (3048)	
③	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)
④	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)

CASTLE 7600 WASHER w/LEFT HAND CONTROLS



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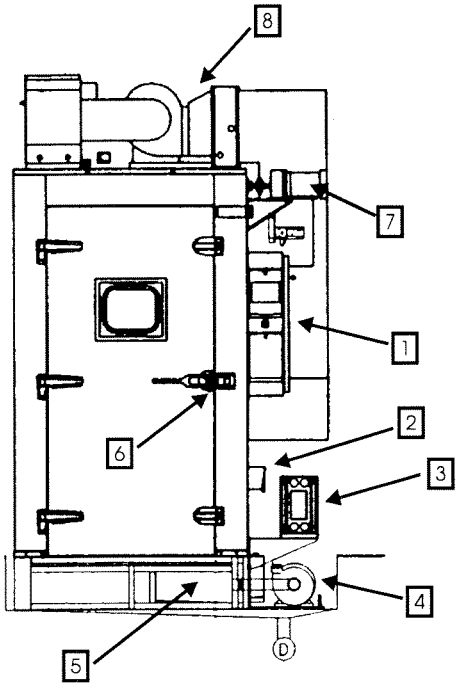
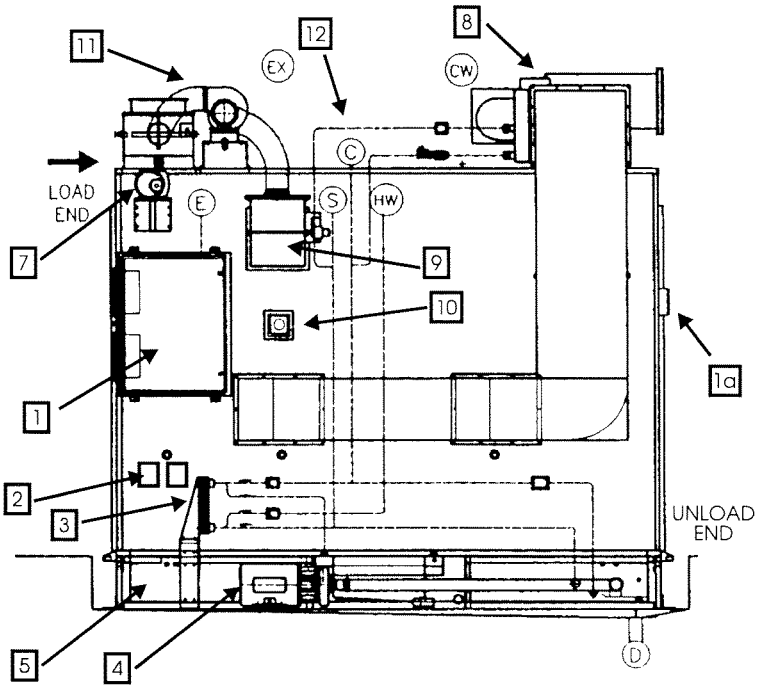
	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC	STANDARD	SEISMIC
①	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)	1'-0" (305)	6" (152)
②	6'-0" (1829)		6'-8" (2032)		7'-4" (2235)		8'-10" (2692)		10'-0" (3048)	
③	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)	3 1/2" (89)	6" (152)
④	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)	2" (51)	6" (152)

CASTLE 7600 WASHER w/RIGHT HAND CONTROLS

EXTERIOR COMPONENTS





1 **Control Box Assembly**
- Touch Screen Interface
- On – Off/Reset Power Switch
- Recorder/Printer (Option)

1a **Unload End Indicator Panel**
- In Operation Indicator
- Cycle Complete Indicator

2 **Liquid Supply Dispensers**
- Detergent
- Rinse Aid

3 **Booster Heater**

4 **Circulation Pump**

5 **Sump**

6 **Door Switch**
- Load End
- Unload End

7 **Spray Manifold Drive Motor**

8 **Forced Air Drying Assembly**
- Blower
- Heat Exchanger
- Condenser

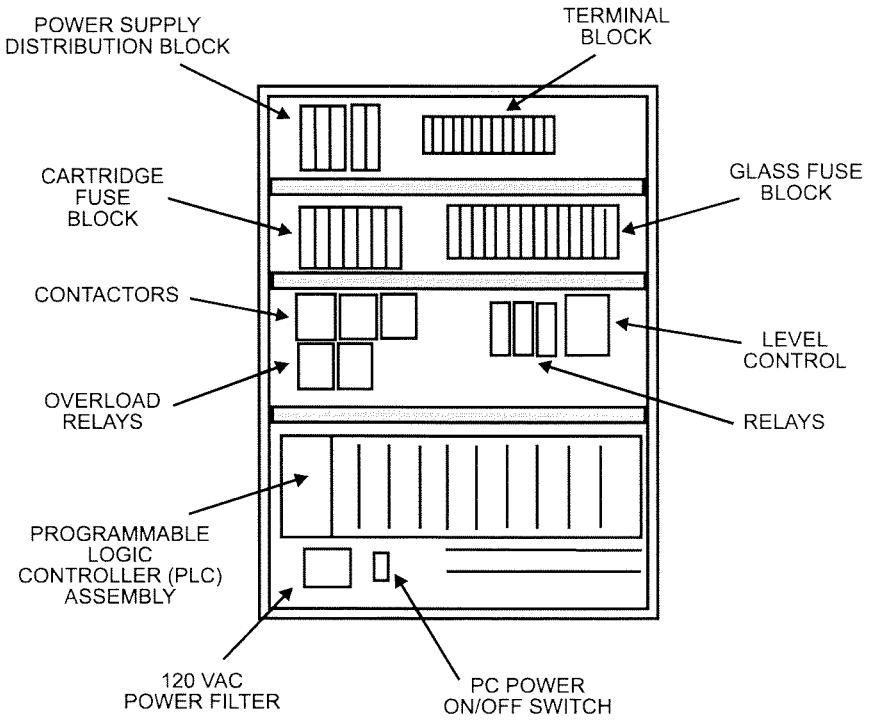
9 **Exhaust Duct Assembly**
- Powered damper

10 **Compartment Light**

11 **Condenser Assembly (Non-Vented Option)**
- Blower
- Condenser

12 **Power Floor Tilt (Option)**
- Actuator
- Switch Assembly

CONTROL BOX INTERIOR COMPONENTS



COMPARTMENT INTERIOR COMPONENTS

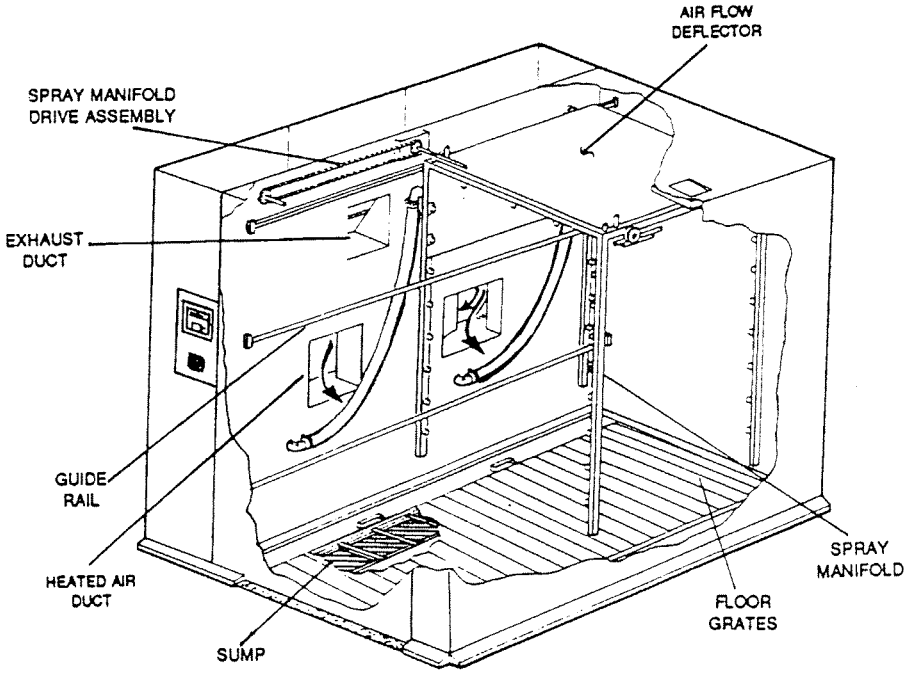


FIGURE 1-3 COMPARTMENT COMPONENTS

SITE _____ W/O # _____

CITY _____ STATE _____ DATE: _____

MODEL 7600

64" COMPARTMENT x 36" W x 78" H (72" OUTSIDE)	1								
72" COMPARTMENT x 36" W x 78" H (80" OUTSIDE)	2								
80" COMPARTMENT x 36" W x 78" H (88" OUTSIDE)	3								
98" COMPARTMENT x 36" W x 78" H (106" OUTSIDE)	4								
112" COMPARTMENT x 36" W x 78" H (120" OUTSIDE)	5								
PIT MOUNTED		P							
FLOOR MOUNTED		F							

LOAD SIDE DOOR HINGED ON:	CONTROLS ON LOAD SIDE:	UNLOAD SIDE DOOR HINGED ON:	
RIGHT HAND	LEFT HAND	LEFT HAND	R
LEFT HAND	RIGHT HAND	RIGHT HAND	L
RIGHT HAND	RIGHT HAND	LEFT HAND	S
LEFT HAND	LEFT HAND	RIGHT HAND	T
RIGHT HAND	RIGHT HAND	RIGHT HAND	A
LEFT HAND	LEFT HAND	LEFT HAND	B
RIGHT HAND	LEFT HAND	RIGHT HAND	E
LEFT HAND	RIGHT HAND	LEFT HAND	F

BOOSTER HEATER				B					
NO BOOSTER HEATER				N					
POWER TILT FLOOR					P				
STANDARD TILT RAMP					T				
VENTED DRYING						V			
NON-VENTED DRYING						C			
CYCLE PRINTER							D		
NO CYCLE PRINTER							N		
120 V-1 PHASE / 208 V-3 PHASE / 60 HZ (FLA)								E	
120 V-1 PHASE / 240 V-3 PHASE / 60 HZ (FLA)								G	
120 V-1 PHASE / 480 V-3 PHASE / 60 HZ (FLA)								J	

	NUMBER	REV
POWER SCHEMATIC		
WIRING SCHEMATIC		
PLC PROGRAM		
INTERFACE PROGRAM		
ASCII PROGRAM		
FINAL ASSEMBLY		
PIT DRAWING		
PARTS LIST		
PLUMBING ASSEMBLY		

**** ACCESSORIES ****	CATALOG #	QTY.
BARRIER WALL TRIM:		
UNLOAD END	-	1
LOAD END	Y940025	
S/S SERVICE ENCLOSURE	Y940026	
SEISMIC ANCHORAGE KIT	Y940027	
STEAM GUN ASSEMBLY	PP7510	
UTENSIL PROCESSING CART	CS2436	
RACKS		

NOTES: _____

PROCESSING CYCLE DESCRIPTION

A 7600 Floor Loading Washer will run the following processing cycle.

Wash
Sump is filled with hot water, and detergent is automatically added when the phase starts. The load is then subjected to the detergent wash spray. Solution temperature (180 °F max.) is maintained by a steam heating coil in the sump. The solution that is used is retained and recirculated through the sump-spray manifold system. At the conclusion of the phase it is automatically drained from the sump.

- Phase time and temperature setpoints are selectable at the Control Panel.

Rinse 1
Sump is filled with hot water. The load is then subjected to a rinse water spray to remove accumulations of detergent solution and loosened soil. Rinse water temperature is not maintained by the steam heating coil in the sump. Used water is retained and recirculated through the sump-spray manifold system. At the conclusion of the phase it is automatically drained from the sump.

- Phase time setpoint and the initial rinse water fill temperature are selectable at the Control Panel.

Rinse 2
Sump is again filled with hot water. The load is then subjected to a rinse water spray to remove any remaining residue of detergent solution and loosened soil. Rinse water temperature (180°F max.)is maintained by the steam heating coil in the sump. Used water is retained and recirculated through the sump-spray manifold system. At the conclusion of the phase it is automatically drained from the sump.

- Phase time and temperature setpoints are selectable at the Control Panel.

Dry
The load is subjected to recirculated, forced hot air for drying purposes. Condensation resulting from the drying process collects in the sump, where it is retained for use in the next cycle's Wash phase (Or, it can be manually drained off, leaving the sump empty.).

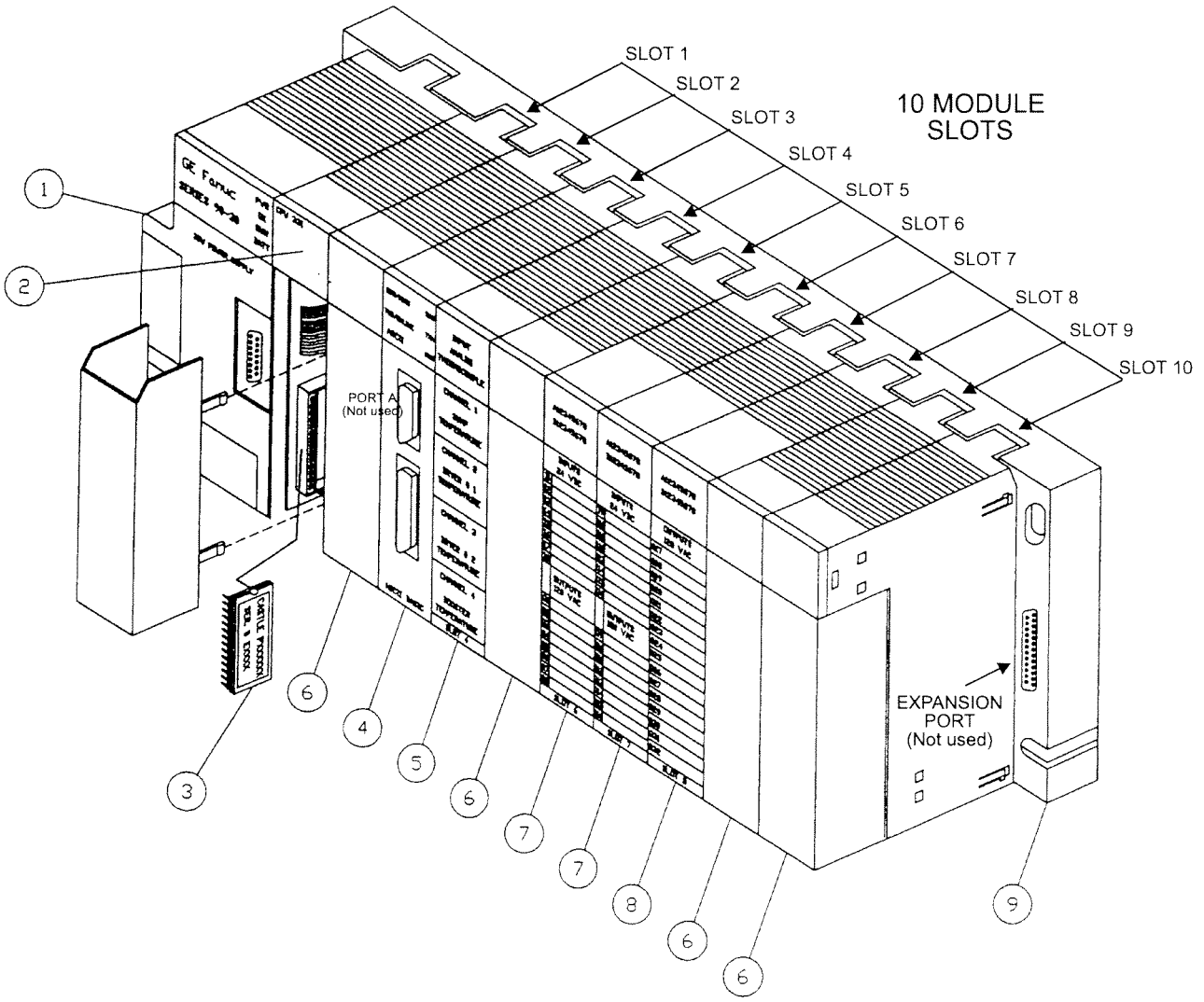
- Phase time and temperature setpoints are selectable at the Control Panel.

Exhaust
The Washer compartment is vented to permit the escape of moisture-laden air.

- Phase time setpoint is selectable at the Control Panel.

PROGRAMMABLE LOGIC CONTROLLER

GENERAL DESCRIPTION



1. 120 VOLT POWER SUPPLY

Provides cable connection port to touchscreen interface.

Provides four operational indicators:

- Power (PWR) Indicator (Green)
- Self monitoring (OK) indicator (Green)
- Operating (RUN) indicator (Green)
- Battery (BATT) low indicator (Red)

2. CENTRAL PROCESSOR (CPU) MODULE

3. EEPROM (CPU chip)

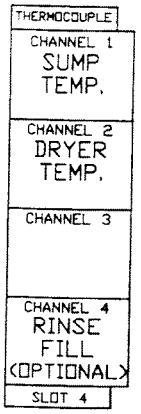
4. ASCII BASIC MODULE (Option)

Provided only on those units with an optional Recorder/Printer. If unit does not have a Recorder/Printer this slot will carry a filler module (See item 6.).

5. THERMOCOUPLE (TYPE-J) MODULE

Provides for three sensor connections to the PLC:

- Sump Temperature
- Dryer temperature
- Booster Heated Water Temperature



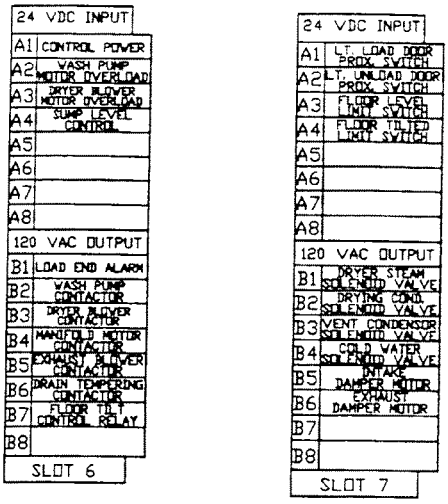
LABEL: THERMOCOUPLE MODULE

6. FILLER MODULE (4-5 Places)

Empty module that occupies an unused slot.

7. DC-IN, AC-OUT MODULE (2 Places)

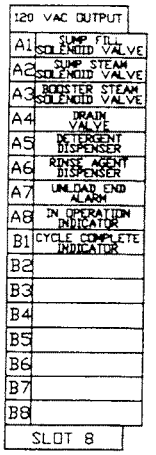
A & B (green) Indicators located above a module's label correspond to designated (energized) inputs and outputs.



LABELS: DC-IN, AC-OUT MODULE

8. AC-OUT MODULE

A & B (green) Indicators located above this module's label correspond to designated (energized) outputs.



LABEL: AC-OUT MODULE

9. BASE UNIT

Base Unit or "Backbone" of the GE FANUC Control is the part in which all the operating modules are attached. It provides 24VDC from the power supply to all the modules for operation and provides communication between the CPU and the other operating modules.

I/O MODULE INSTALLATION & WIRING

This section contains information relevant to field wiring to and from those modules.

Inserting A Module

Use the following instructions as a guide when inserting a module into its slot in the base unit.

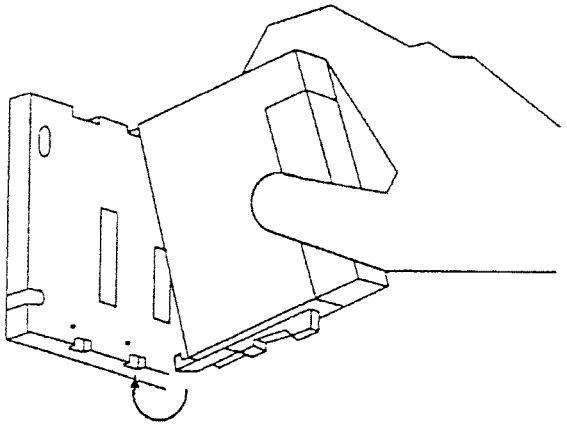
Do not insert or remove a module with the electrical power applied. This could cause the PLC to Stop, damage may be incurred to the module, or may result in personal injury.

1. Select the slot into which the module is to be inserted. Grasp the module firmly with the terminal board toward you and with the rear hook facing away.

2. Align the module with slot and connector. Tilt the module upwards so the top rear hook of the module engages the slot in the base.

3. Swing the module downward until the connectors mate and the lock lever on the bottom of the module snaps into place.

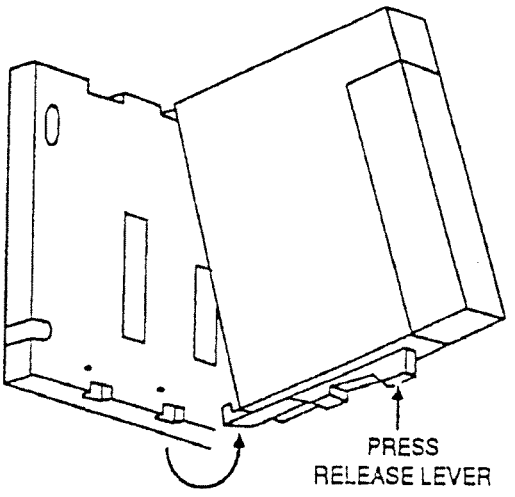
4. Visually inspect the module to make sure it is properly seated.



Removing A Module

Voltages from user devices may be present on a module's screw terminals even though power to the PLC is turned off. Care must be taken any time that you are handling the module's removable terminal board or any wires connected to it.

1. Locate the release lever at the bottom of the module and firmly press it up – towards the module.



2. While holding the module firmly at the top and fully depressing the release lever, swing the module upward (the release lever must be free of its retaining slot.).

3. Disengage the hook at the top-rear of the module by raising the module up and moving it away from the slot.

Installing A Terminal Board

To install a terminal board with no wires attached:

1. Hook the hinge, located on the bottom of the termnal board, to the lower slot on the module.

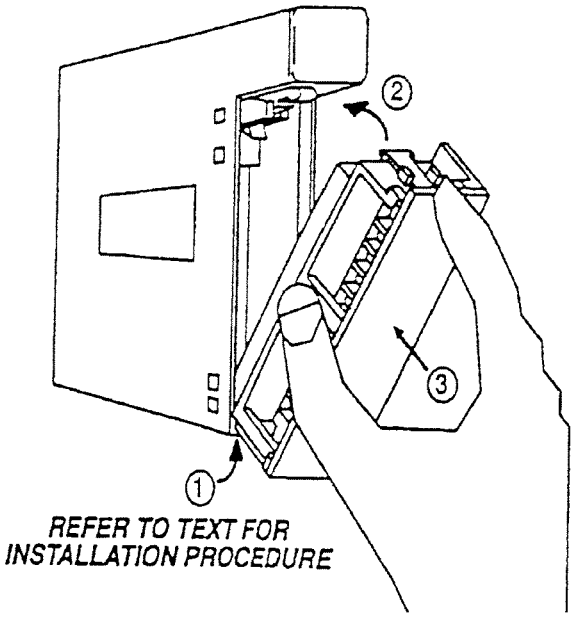
2. Push the terminal board towards the module until it snaps into place.

3. Open the terminal board cover and ensure that the latch on the module is securely holding the terminal board in place

When installing a terminal board that has wiring attached verify that the terminal board is connected to the proper module type.

CAUTION

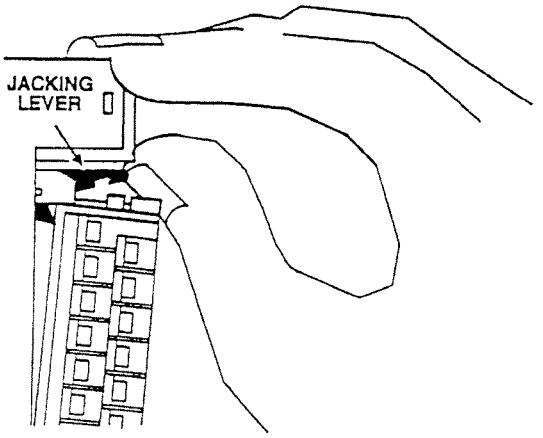
Check the labels on the hinged door and the module to ensure that they match. iF a prewired terminal board is installed on the wrong module type, damage to the module may occur.



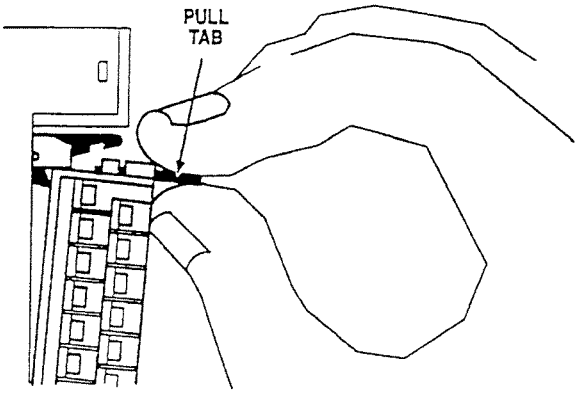
Removing A Terminal Board

1. Open the plastic terminal board cover.

2. Push up on the jacking lever to release the terminal block.

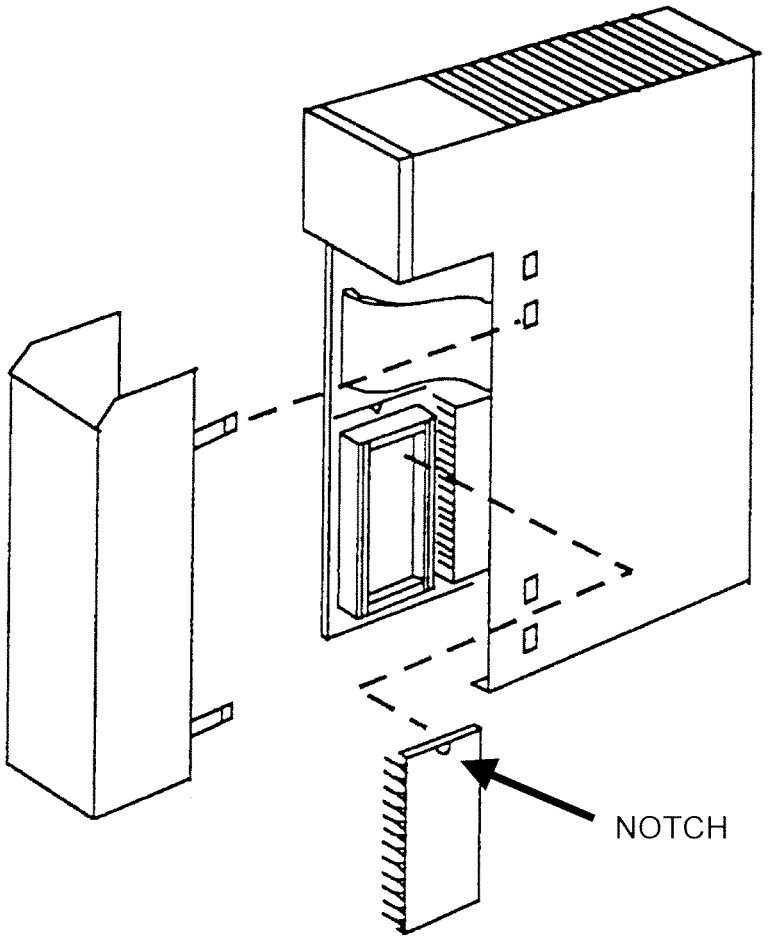


3. Grasp the terminal's pull tab and pull it toward you until contacts have separated from the module housing and the hook has disengaged for full removal.



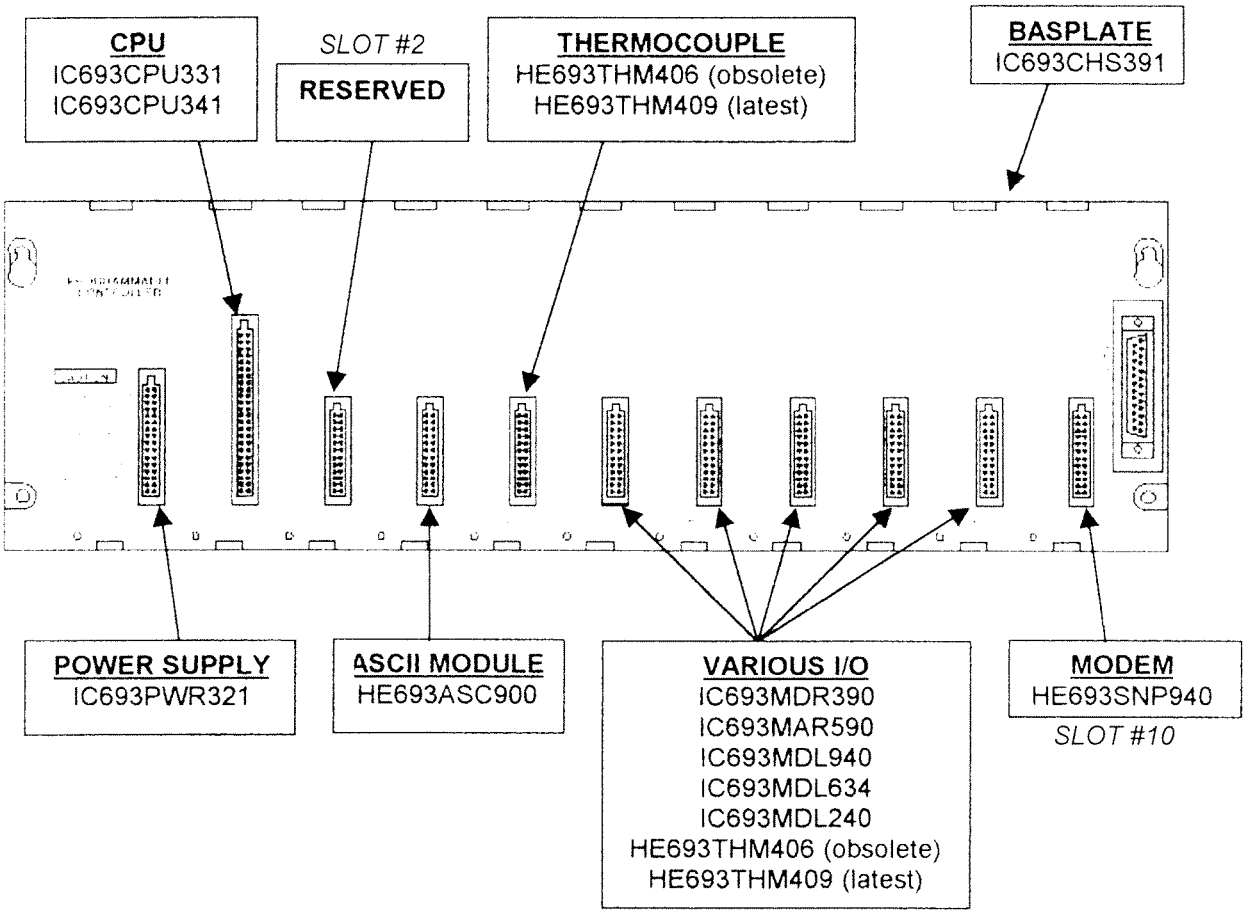
EEPROM

The EEPROM is located within the CPU module in Slot 1. When replacing, make sure the chip is installed with the notched end UP.



NOTES:

PLC 10-SLOT BASE LAYOUT



- The Power Supply and CPU slots have different sized connectors than the rest of the slots. It is impossible to plug the wrong modules in here, or to be able to place the Power Supply and CPU modules anywhere but where they belong.
- Slot 2 is reserved for factory use.
- Slot 3 is the location of an optional ASCII module. This module controls a data printer.
- Slot 4 is the thermocouple slot. In some units that have more than four temperature probes, a second thermocouple module would be placed into Slot 5.
- Slots 5 through 9 are utilized of Input and Output modules.
- Slot 10 is reserved for an optional Modem module.
- All module part numbers may be found by removing the module from its slot and locating the identification label on the left side of the module. The part number is normally followed by one or two letters, these are revision codes only, and do not count as part of the number.

CASTLE PLC PART NUMBERS

MODULE PART NUMBER	CASTLE PART NUMBER	DESCRIPTION
IC693CHS391	M2031028	10-Slot Backplate
IC693CHS331	M2031028	CPU
IC693CHS341	(See Note 1)	CPU
IC693MAR590	M2031032	(8) 120 vac Inputs / (8) Relay Outputs (2 amp.)
IC693MDL240	M401229	(16) 120 vac Inputs
IC693MDL634	M400756	(8) 24 vdc Inputs
IC693MDL940	M400575	(16) Relay Outputs (2 amps)
IC693MDR390	M2031031	(8) 24 vdc inputs / (8) Relay Outputs
IC693PWR321	M2031027	Power Supply
HE693ASC900	(See Note 1)	ASCII Basic Module
HE693SNP940	M401202	Modem Module
HE693THM406	(See Note 2)	4-Channel Thermocouple (obsolete)
HE693THM409	M2031034	4-Channel Thermocouple

NOTE 1:
Order this module by its program number. Program number is located on same side of module as the identification label.

CASTLE # P98013A
SER. # E0277

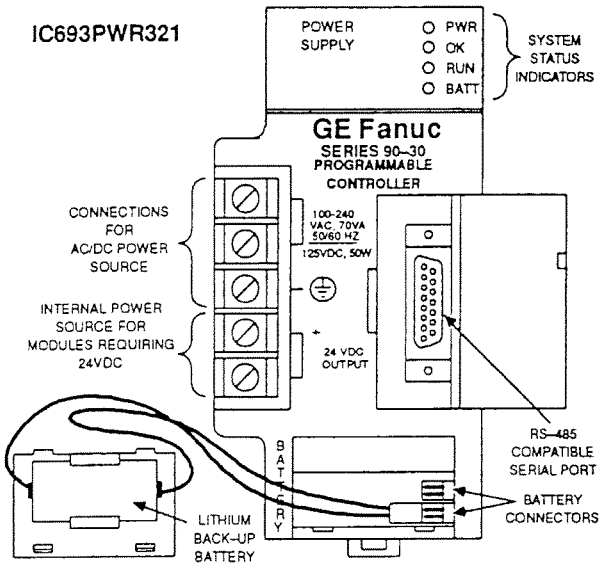
Example: Program Label

To order a module with this label the correct part number would be MP98013. The "M" indicates the washer manufacturer's location, the "P" indicates that it is a software PROGRAM, the "98" is the program date, is a sequential number stating that this was the thirteenth program written in 98, and the "A" is the program's revision level (Revision level is not required for ordering.)

NOTE 2:
This item is obsolete. When ordering a thermocouple module, use Part No: M2031034.

POWER SUPPLY MODULE: M2031027

Power supplies must reside in the leftmost slot in all baseplates, and are connected to the backplate through the backplate connector to which they are attached.



FIELD WIRING CONNECTIONS TO AC/DC

AC Power Source Connections

The Hot, Neutral, and Ground wires from the 120 VAC power source or L1, L2, and Ground wires from the 240 VAC power source connect to the PLC system to the top three protected terminals on a terminal connector on the power supply faceplate.

DC Power Source Connections

The + and – wires from the 100 to 150 VDC power source connect to the top two protected terminals on the terminal connector.

24 VDC Output

The bottom two connections provide terminals for connections to the internally supplied Isolated 24 volt DC output which can be used to provide power for input circuits (within power limitations of the supply).

CAUTION

If the Isolated 24 VDC supply is overloaded or shorted, the PLC will stop operation.

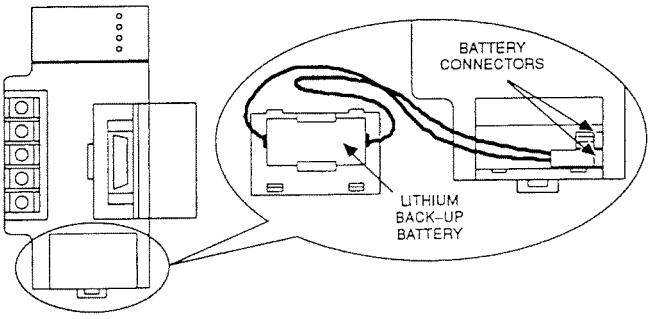
BACKUP BATTERY FOR RAM MEMORY

The lithium battery used to maintain the contents of the CMOS RAM memory in the CPU is accessed by removing the cover plate located at the bottom of the power supply faceplate. This battery is mounted on a plastic clip attached to the inside of the cover.

The battery connects to the CPU through a cable which has one end wired to the positive and negative sides of the battery and the other end wired to a connector that mates with one of two identical connectors mounted on the PLC. This battery may be replaced with power applied to the PLC.

CAUTION

If a Low Battery Warning (BATT LED turns on) occurs, replace the battery located in the power supply BEFORE removing power from the rack. Otherwise, there is a possibility that data will be corrupted or the application program will be cleared from memory.



System Status Indicators

PWR - Indicates 120 VAC is available to the Power Supply Module.

OK - Indicates the CPU Program is running. This will be green when the CPU is OK

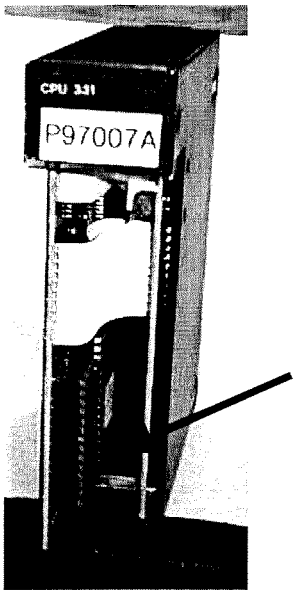
RUN - Indicates the system is running the program without interruptions.

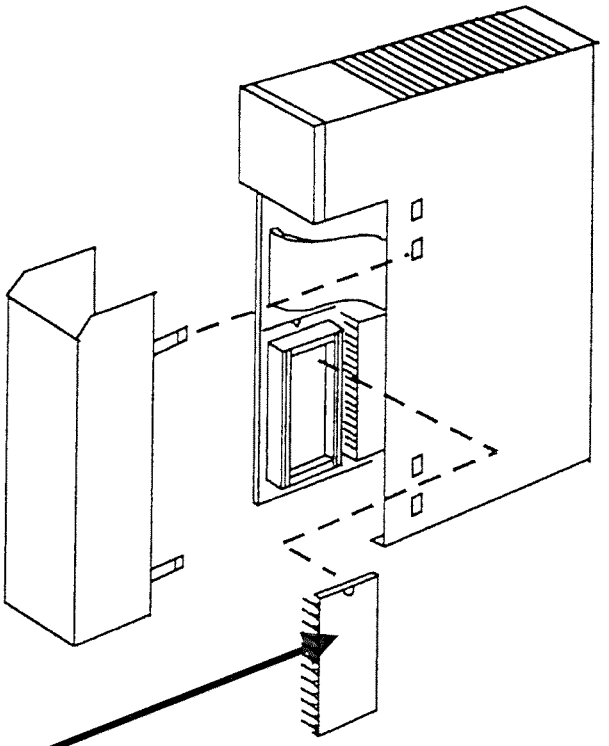
BATT- Lights red to indicate the back up battery is low.

CPU Module

CPU Module- The CPU Module (Central Processing Unit) houses the processor for the controller. Each CPU module contains an EPROM chip. The EPROM chip contains the software program for the Controller. The version of EPROM and program number is stamped on a white label on each chip. The CPU contains an internal capacitance battery which is will maintain a charge for up to 1 hour. If the CPU is removed for more than 1 hour, the programmed values (cycles times and temperatures) will be lost. The program will revert to the default settings.

The CPU is a 80188 based processor with a speed of 10 Megahertz and a memory of 48 K bytes.

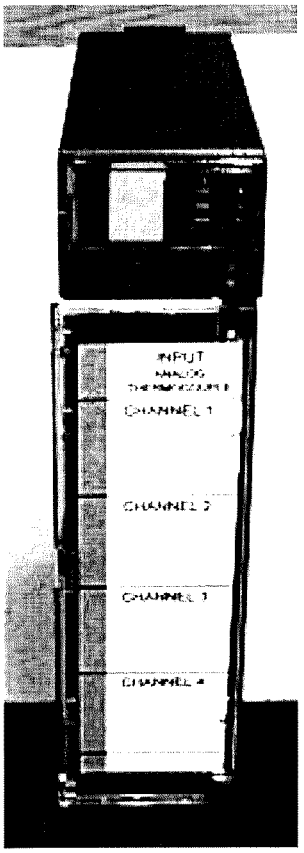




EPROM CHIP

Thermocouple Module

The Thermocouple module is used to interface the GE Controller to the Thermocouples. Each Thermocouple module has the ability to interface with 4 thermocouples. If a unit contains more than 4 thermocouples an additional module will be used. No calibration procedures exist for the thermocouple modules.

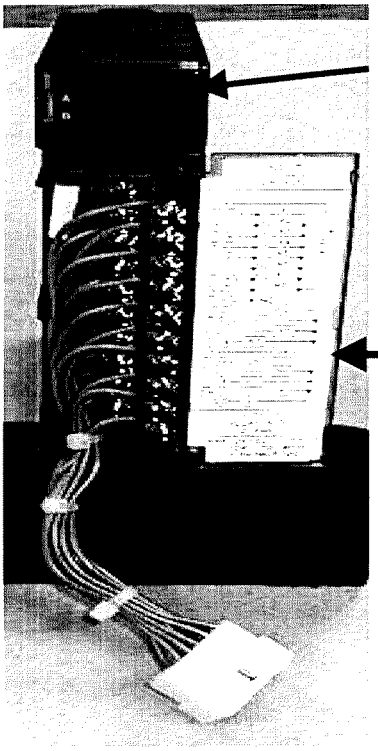


Output Module

The Output module functions as a solid state relay module. The output module is designed for use with outputs of 2 amps or less. In situations where larger devices are present (Motors, pumps, etc.), contactors or relays may be used. Each module contains a wiring diagram on the inside of the front panel for assistance in troubleshooting. The energized outputs are illuminated on the front panel.

When troubleshooting output modules always verify power to the module is available. In most cases, the incoming power to the modules is fuse protected external to the module.

On reference material such as wiring diagrams, ladder logic, etc. outputs are commonly labeled with a Q then the corresponding number. Such as Q14. In the example provided Q14 is indicated as B6. In the example, the output is energized.
An output module wiring diagram and functional layout of the module is covered in greater description on page 2-13.



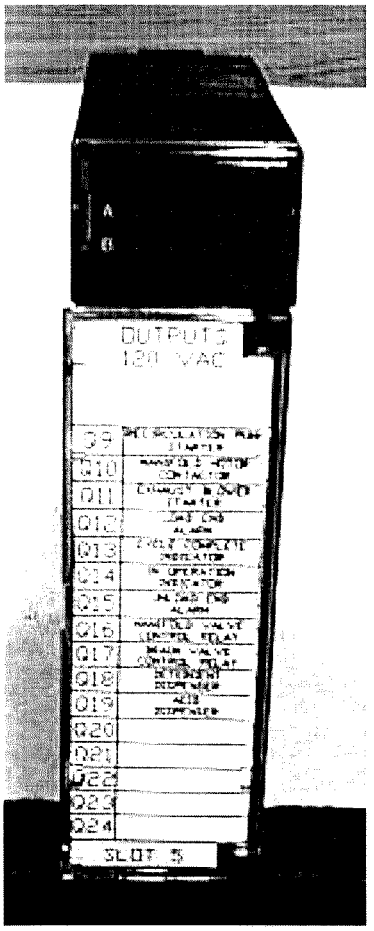
In this example, outputs 3,4 and 14 are energized.

A12 5678
B12345 78

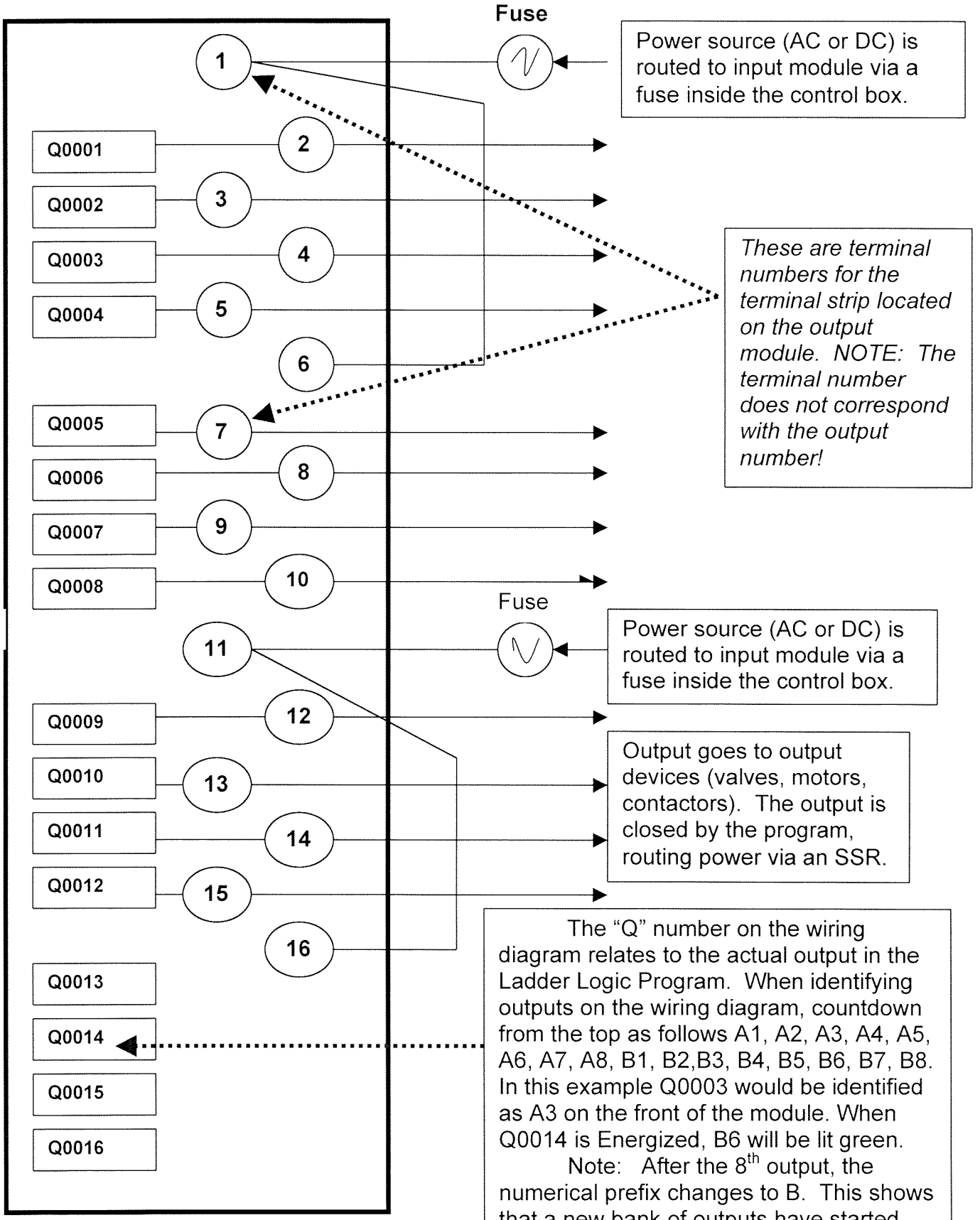
Row B starts with output #9

Wiring diagram

See page 6-2 for more information



OUPUT MODULE


Fuse
Power source (AC or DC) is routed to input module via a fuse inside the control box.
1
Q0001
2
Q0002
3
Q0003
4
Q0004
5
6
These are terminal numbers for the terminal strip located on the output module. NOTE: The terminal number does not correspond with the output number!
Q0005
7
Q0006
8
Q0007
9
Q0008
10
Fuse
Power source (AC or DC) is routed to input module via a fuse inside the control box.
11
Q0009
12
Output goes to output devices (valves, motors, contactors). The output is closed by the program, routing power via an SSR.
Q0010
13
Q0011
14
Q0012
15
16
Q0013
Q0014
Q0015
Q0016
The "Q" number on the wiring diagram relates to the actual output in the Ladder Logic Program. When identifying outputs on the wiring diagram, countdown from the top as follows A1, A2, A3, A4, A5, A6, A7, A8, B1, B2,B3, B4, B5, B6, B7, B8. In this example Q0003 would be identified as A3 on the front of the module. When Q0014 is Energized, B6 will be lit green.
Note: After the 8th output, the numerical prefix changes to B. This shows that a new bank of outputs have started, which receive power from a different fuse.

Input/Output Module

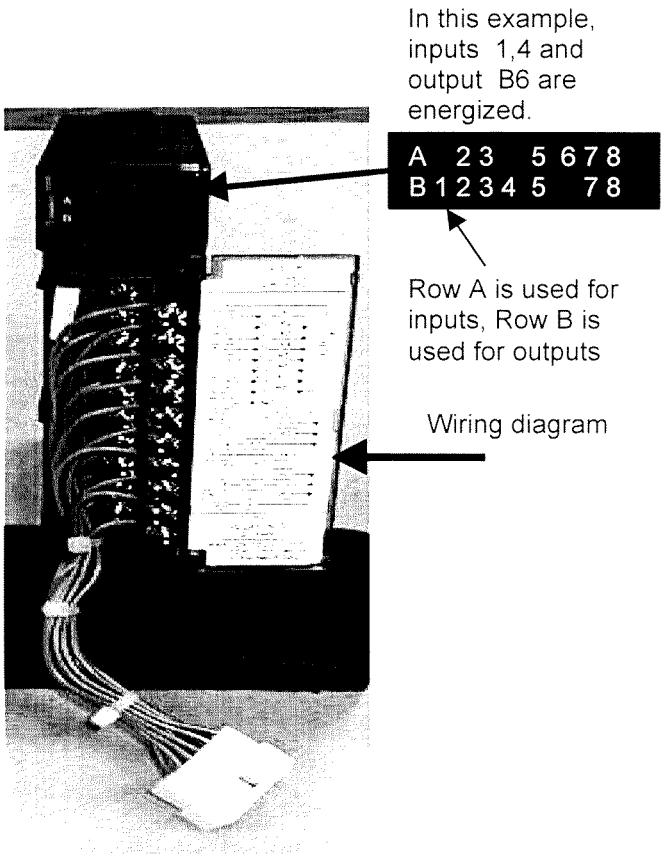
The Input/Output module is divided into two sections. The first 8 are inputs, the second 8 are outputs. In rare cases, a dedicated input module may be used. A dedicated input module utilizes 16 inputs, and no outputs.

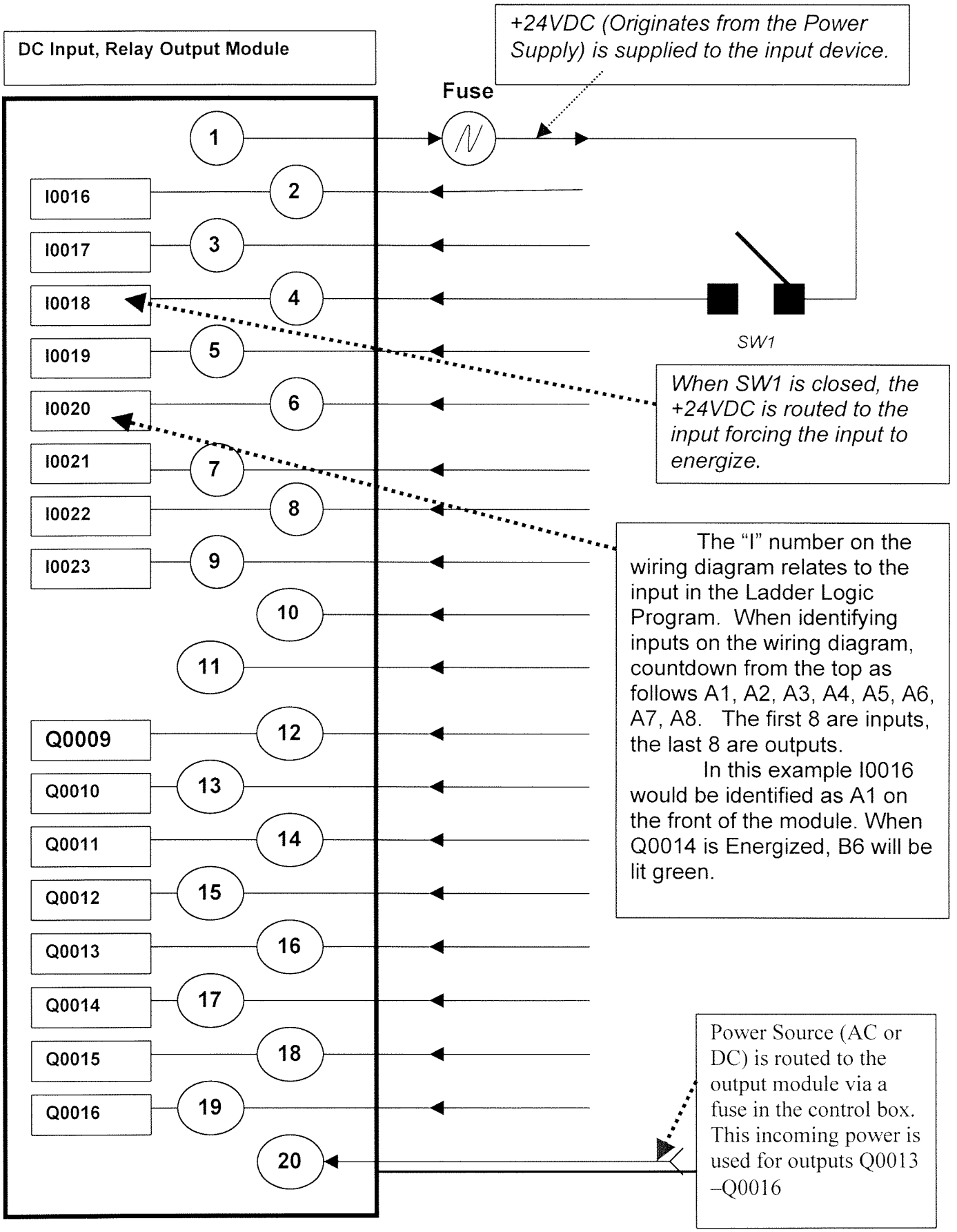
The Input/Output module functions as a solid state input and output module. The module is designed for use with inputs/outputs of 2 amps or less. Each module contains a wiring diagram on the inside of the front panel for assistance in troubleshooting. The energized inputs/outputs are illuminated on the front panel. An input/output is considered energized when an input device (switch, level control, push button) is closed.

When troubleshooting input/output modules always verify the input power to the module is available. In most cases, the incoming power to the modules is fuse protected external to the module.

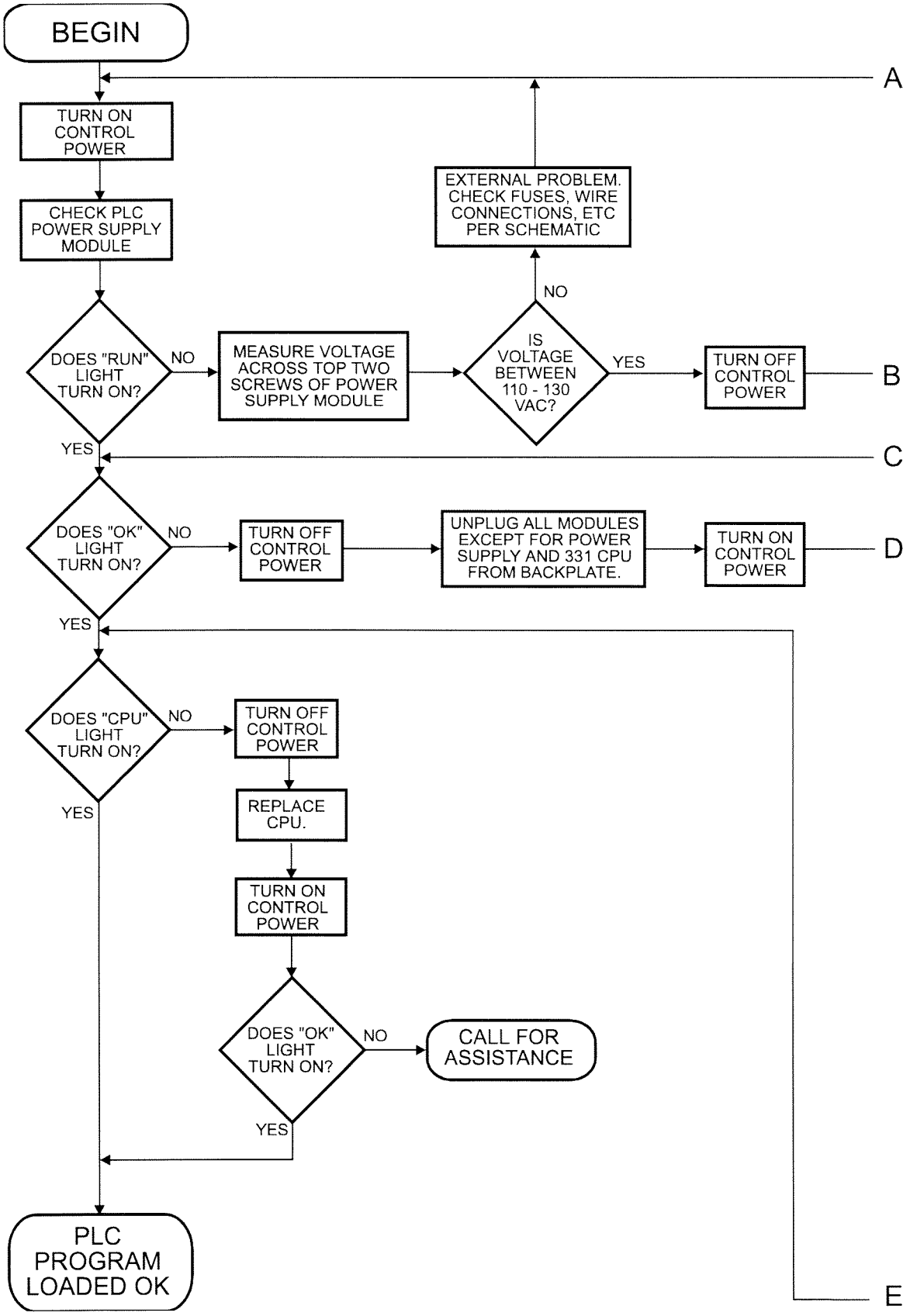
On reference material such as wiring diagrams, ladder logic, etc. inputs are commonly labeled with an "I" then the corresponding number. Outputs are labeled with a "Q" .

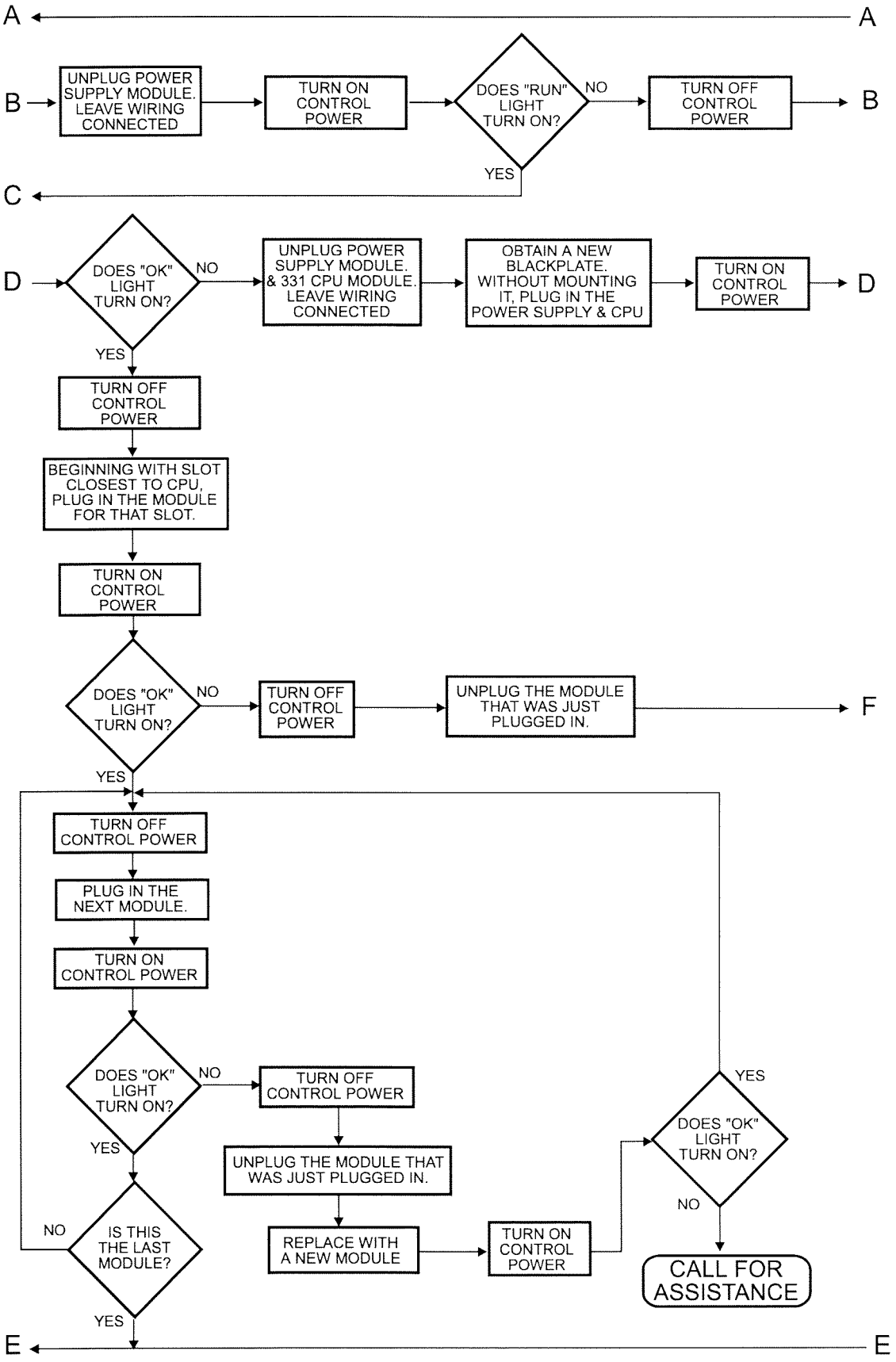
For a more detailed functional description, refer to page 2-15.

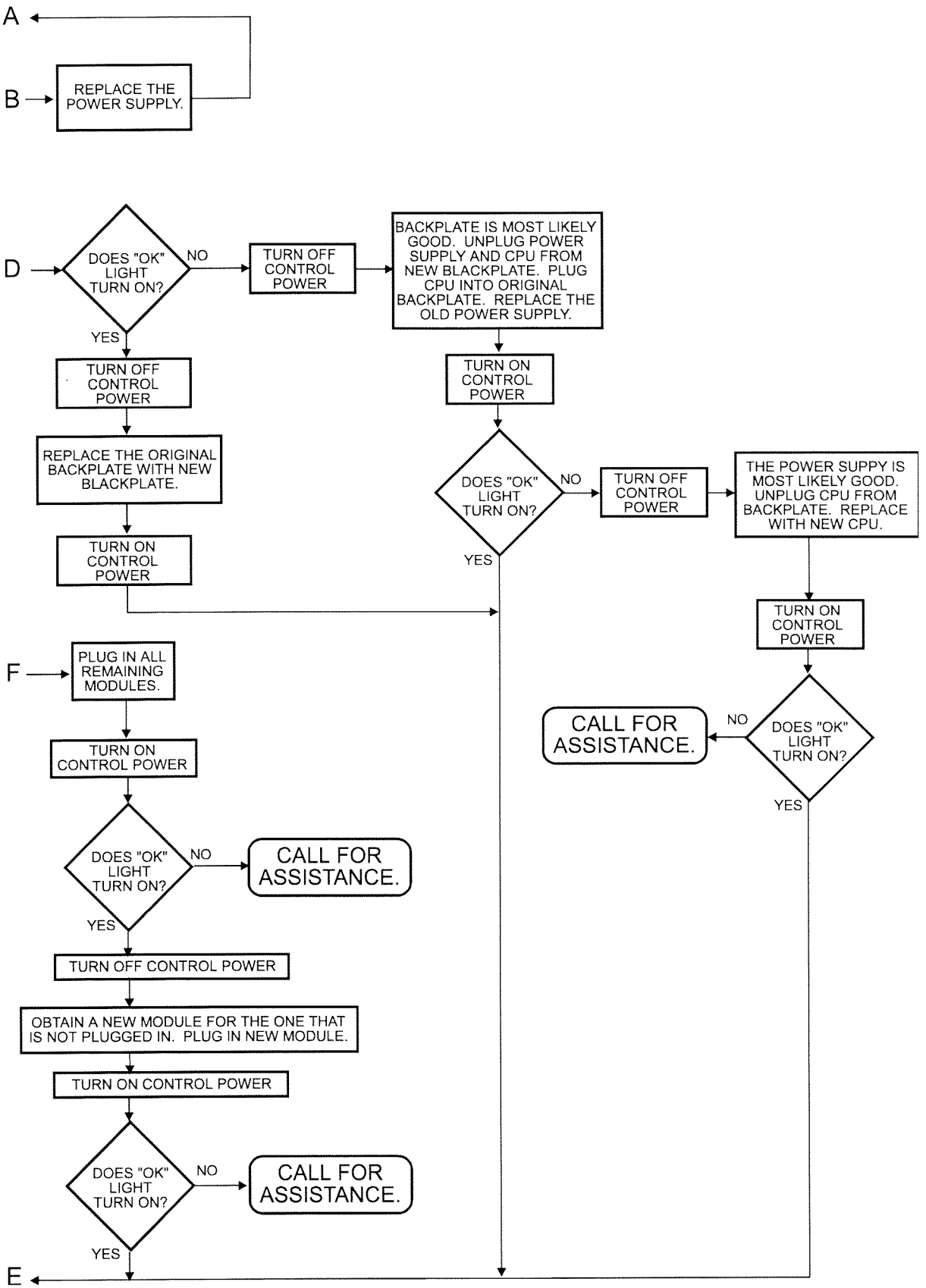

In this example, inputs 1,4 and output B6 are energized.
A 23 5678
B12345 78
Row A is used for inputs, Row B is used for outputs
Wiring diagram


DC Input, Relay Output Module
+24VDC (Originates from the Power Supply) is supplied to the input device.
Fuse
1
I0016
2
I0017
3
I0018
4
I0019
5
I0020
6
I0021
7
I0022
8
I0023
9
10
11
Q0009
12
Q0010
13
Q0011
14
Q0012
15
Q0013
16
Q0014
17
Q0015
18
Q0016
19
20
SW1
When SW1 is closed, the +24VDC is routed to the input forcing the input to energize.
The "I" number on the wiring diagram relates to the input in the Ladder Logic Program. When identifying inputs on the wiring diagram, countdown from the top as follows A1, A2, A3, A4, A5, A6, A7, A8. The first 8 are inputs, the last 8 are outputs.
In this example I0016 would be identified as A1 on the front of the module. When Q0014 is Energized, B6 will be lit green.
Power Source (AC or DC) is routed to the output module via a fuse in the control box. This incoming power is used for outputs Q0013 –Q0016

PLC TROUBLESHOOTING FLOWCHART




A
A
B
UNPLUG POWER SUPPLY MODULE. LEAVE WIRING CONNECTED
TURN ON CONTROL POWER
DOES "RUN" LIGHT TURN ON?
NO
TURN OFF CONTROL POWER
B
YES
C
D
DOES "OK" LIGHT TURN ON?
NO
UNPLUG POWER SUPPLY MODULE. & 331 CPU MODULE. LEAVE WIRING CONNECTED
OBTAIN A NEW BLACKPLATE. WITHOUT MOUNTING IT, PLUG IN THE POWER SUPPLY & CPU
TURN ON CONTROL POWER
D
YES
TURN OFF CONTROL POWER
BEGINNING WITH SLOT CLOSEST TO CPU, PLUG IN THE MODULE FOR THAT SLOT.
TURN ON CONTROL POWER
DOES "OK" LIGHT TURN ON?
NO
TURN OFF CONTROL POWER
UNPLUG THE MODULE THAT WAS JUST PLUGGED IN.
F
YES
TURN OFF CONTROL POWER
PLUG IN THE NEXT MODULE.
TURN ON CONTROL POWER
DOES "OK" LIGHT TURN ON?
NO
TURN OFF CONTROL POWER
YES
UNPLUG THE MODULE THAT WAS JUST PLUGGED IN.
YES
DOES "OK" LIGHT TURN ON?
NO
CALL FOR ASSISTANCE
NO
IS THIS THE LAST MODULE?
REPLACE WITH A NEW MODULE
TURN ON CONTROL POWER
YES
E
E


A
B
REPLACE THE POWER SUPPLY.
D
DOES "OK" LIGHT TURN ON?
NO
YES
TURN OFF CONTROL POWER
BACKPLATE IS MOST LIKELY GOOD. UNPLUG POWER SUPPLY AND CPU FROM NEW BLACKPLATE. PLUG CPU INTO ORIGINAL BACKPLATE. REPLACE THE OLD POWER SUPPLY.
TURN ON CONTROL POWER
REPLACE THE ORIGINAL BACKPLATE WITH NEW BLACKPLATE.
TURN ON CONTROL POWER
DOES "OK" LIGHT TURN ON?
NO
TURN OFF CONTROL POWER
THE POWER SUPPY IS MOST LIKELY GOOD. UNPLUG CPU FROM BACKPLATE. REPLACE WITH NEW CPU.
YES
TURN ON CONTROL POWER
F
PLUG IN ALL REMAINING MODULES.
TURN ON CONTROL POWER
CALL FOR ASSISTANCE.
NO
DOES "OK" LIGHT TURN ON?
YES
DOES "OK" LIGHT TURN ON?
NO
CALL FOR ASSISTANCE.
YES
TURN OFF CONTROL POWER
OBTAIN A NEW MODULE FOR THE ONE THAT IS NOT PLUGGED IN. PLUG IN NEW MODULE.
TURN ON CONTROL POWER
DOES "OK" LIGHT TURN ON?
NO
CALL FOR ASSISTANCE.
YES
E

CONTENTS

DWG #	DESCRIPTION	MODEL	PAGE
Y970410	208V Power Distribution Wiring Schematic	76001-4	3-3
Y970347	208V Power Distribution Wiring Schematic	76005	3-5
Y970363	240V Power Distribution Wiring Schematic	76001-4	3-7
Y980364	240V Power Distribution Wiring Schematic	76005	3-9
Y980366	380V Power Distribution Wiring Schematic	76001-4	3-11
Y980367	380V Power Distribution Wiring Schematic	76005	3-13
Y970741	415V Power Distribution Wiring Schematic	76001-4	3-15
Y980369	415V Power Distribution Wiring Schematic	76005	3-17
Y970738	480V Power Distribution Wiring Schematic	76001-4	3-19
Y980181	480V Power Distribution Wiring Schematic	76005	3-21
Y980371	600V Power Distribution Wiring Schematic	76001-4	3-23
Y980372	600V Power Distribution Wiring Schematic	76005	3-25
Y970346	120V Wiring Schematic	76001-5	3-27,-41

Y970410

CONTROL BOX

NOTE:

THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.

SERVICE REQUIREMENTS

VOLTAGE	208
PHASES	3
FREQUENCY	50/60 HZ.
WIRES	5 (L1,L2,L3,N,G)
FULL LOAD AMPS	20.3
KILOWATTS	6.6
SERVICE SIZE	30 AMP.
SERVICE WIRE	10 GAUGE
DISCONNECT FUSING	30 AMP

CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)

NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.

MAIN POWER DISTRIBUTION BLOCK

(SEE WIRING SCHEMATIC)

1F-20A TIME DELAY CARTRIDGE
2F-20A TIME DELAY CARTRIDGE
3F-20A TIME DELAY CARTRIDGE
1M
1OL
J36 P36
1 MTR
RECIRCULATION PUMP
208V, 3 PH., 5 HP.
16.7A FLA

4F-7A TIME DELAY CARTRIDGE
5F-7A TIME DELAY CARTRIDGE
6F-7A TIME DELAY CARTRIDGE
2M
2OL
J37 P37
2 MTR
DRYER BLOWER
208V, 3 PH., 1 HP.
4.0A FLA

7F-9A TIME DELAY CARTRIDGE
4M
J39 P39
4 MTR
MANIFOLD MOTOR
120V, 1/4 HP
5.8A FLA

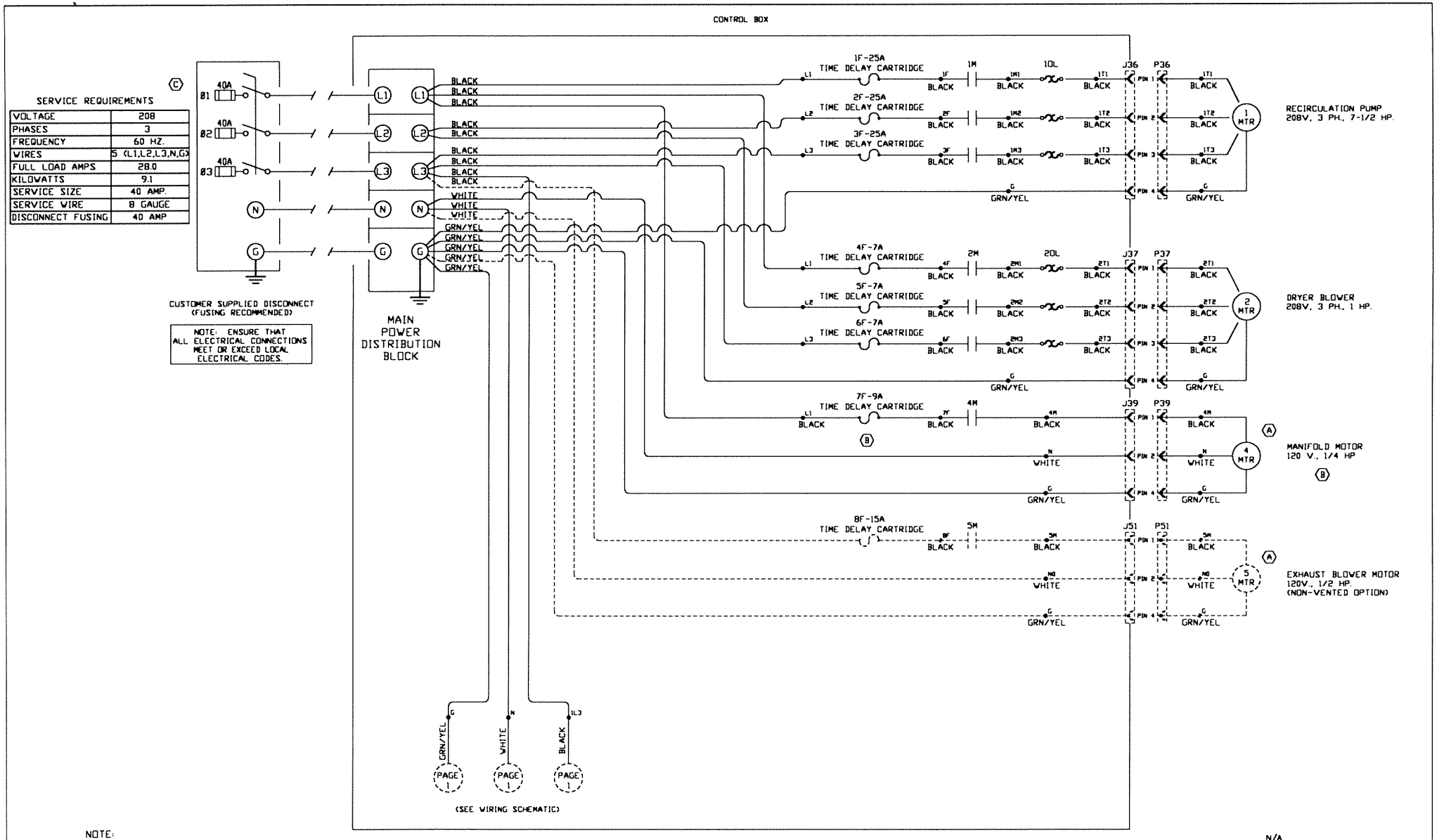
8F-15A TIME DELAY CARTRIDGE
5M
J51 P51
3 MTR
EXHAUST BLOWER MOTOR
120V, 1/2 HP.
9.8A FLA
(NON-VENTED OPTION)

C 119412A DM 09/11/00

Geringe/Castle, Inc.
1777 East Henrietta Road
Rochester, NY 14623-3133

SCHEMATIC,WIRING,
208V POWER DIST

PROJECT 76001-4
N/A
SCALE NTS
SHEET 1 OF 1
Y970410
C



NOTE:

THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.

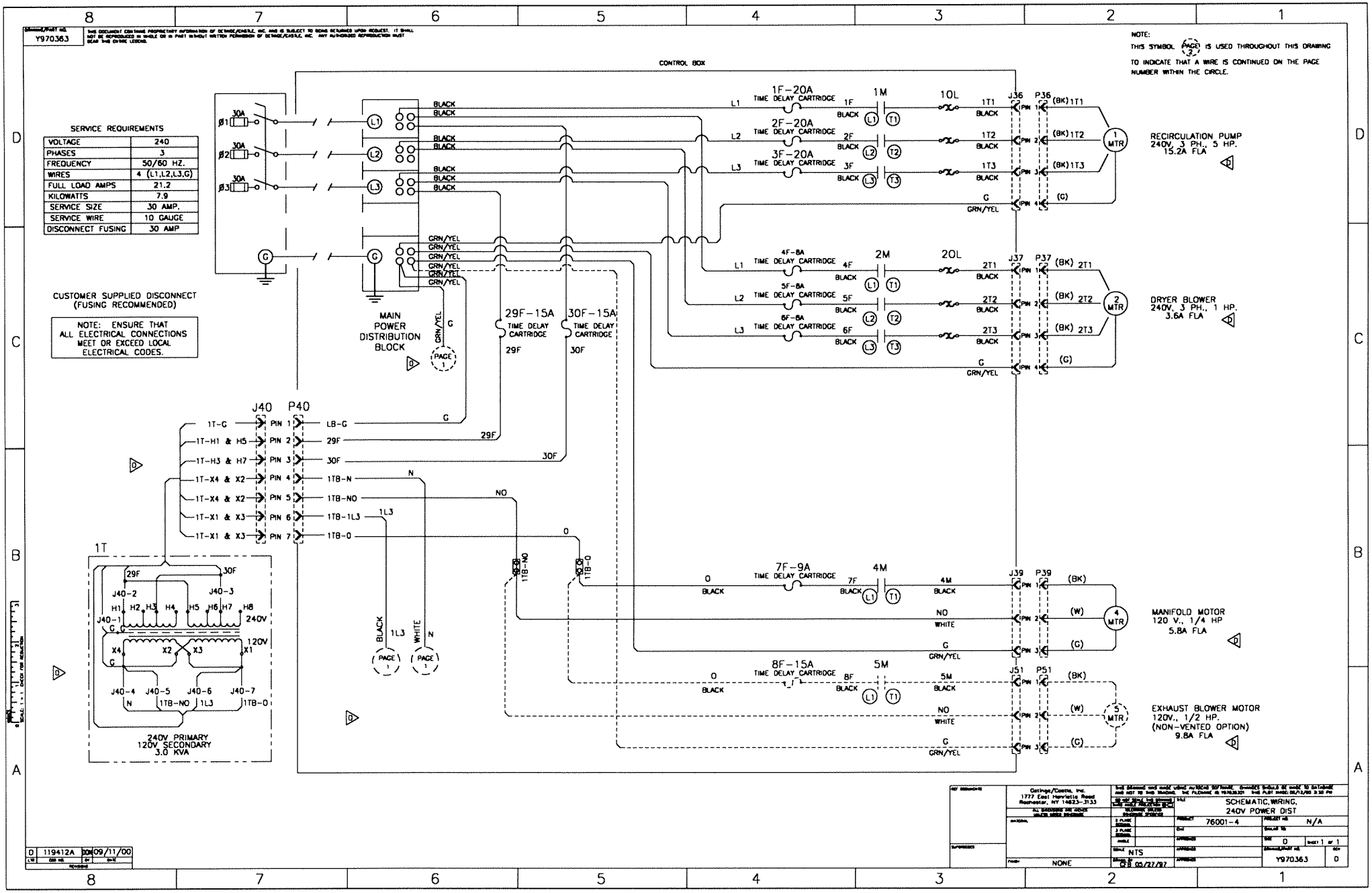
LET	REVISION	BY	DATE
C	28.0 FLA WAS 29.8 FLA.	CFB	10/26/98
B	MANIFOLD MOTOR 4MTR WAS 1/6 HP, CHANGED TO 1/4 HP. FUSE 7F WAS 7A, CHANGED TO 9A.	CFB	06/17/98
A	4M WAS 3M. ADDED 5M (EXHAUST BLOWER OPTION).	CFB	07/02/97

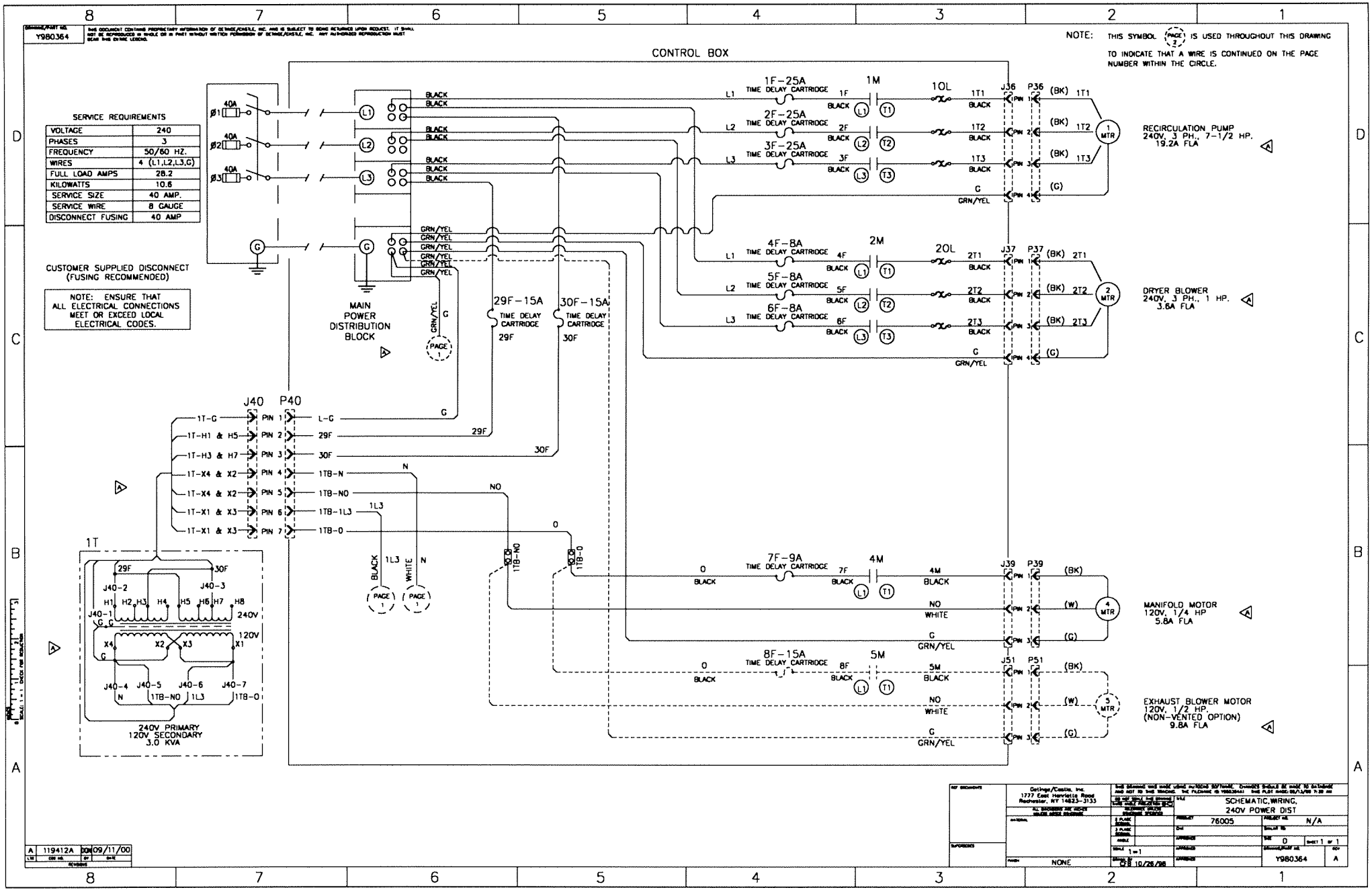
Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA 17236

N/A

208 VOLT POWER DISTRIBUTION WIRING SCHEMATIC

PROJECT	SCALE
7600	NTS
CFB 5-20-97	Y970347


Y970363
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
CONTROL BOX
SERVICE REQUIREMENTS
VOLTAGE 240
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 21.2
KILOWATTS 7.9
SERVICE SIZE 30 AMP.
SERVICE WIRE 10 GAUGE
DISCONNECT FUSING 30 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-20A TIME DELAY CARTRIDGE
2F-20A TIME DELAY CARTRIDGE
3F-20A TIME DELAY CARTRIDGE
1M
10L
RECIRCULATION PUMP 240V, 3 PH., 5 HP. 15.2A FLA
4F-8A TIME DELAY CARTRIDGE
5F-8A TIME DELAY CARTRIDGE
6F-8A TIME DELAY CARTRIDGE
2M
20L
DRYER BLOWER 240V, 3 PH., 1 HP. 3.6A FLA
29F-15A TIME DELAY CARTRIDGE
30F-15A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
4M
MANIFOLD MOTOR 120 V., 1/4 HP 5.8A FLA
8F-15A TIME DELAY CARTRIDGE
5M
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8A FLA
J40 P40
1T
240V PRIMARY 120V SECONDARY 3.0 KVA
Gettinge/Castle, Inc. 1777 East Henrietta Road Rochester, NY 14623-3133
SCHEMATIC, WIRING, 240V POWER DIST
PROJECT 76001-4
N/A
NTS
NONE
05/27/97
Y970363
D 119412A 09/11/00



Y980364

A	119412A	DK	09/11/00

Gettinge/Castle, Inc.
1777 East Henrietta Road
Rochester, NY 14623-3133

SCHEMATIC, WIRING, 240V POWER DIST

PROJECT	76005	ASSEMBLY NO.	N/A
SCALE	NONE	SHEET	1 of 1
DRAWING/PART NO.	Y980364	REV	A
DATE	10/26/98		

Y980366

CONTROL BOX

NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.

SERVICE REQUIREMENTS

VOLTAGE	380
PHASES	3
FREQUENCY	50/60 HZ.
WIRES	4 (L1,L2,L3,G)
FULL LOAD AMPS	13.4
KILOWATTS	7.9
SERVICE SIZE	20 AMP.
SERVICE WIRE	14 GAUGE
DISCONNECT FUSING	20 AMP

CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)

NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.

MAIN POWER DISTRIBUTION BLOCK

1F-15A TIME DELAY CARTRIDGE
2F-15A TIME DELAY CARTRIDGE
3F-15A TIME DELAY CARTRIDGE
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
29F-15A TIME DELAY CARTRIDGE
30F-15A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
8F-15A TIME DELAY CARTRIDGE

1M, 2M, 4M, 5M
10L, 20L

RECIRCULATION PUMP 380V, 3 PH., 5 HP. 9.8A FLA

DRYER BLOWER 380V, 3 PH., 1 HP. 1.9A FLA

MANIFOLD MOTOR 120V, 1/4 HP 5.8A FLA

EXHAUST BLOWER MOTOR 120V, 1/2 HP. (NON-VENTED OPTION) 9.8A FLA

J40 P40

1T

380V PRIMARY
120V SECONDARY
3.0 KVA

A	119412A	DM	09/11/00	

Catalina/Castle, Inc.
1777 East Henrietta Road
Rochester, NY 14623-3133

SCHEMATIC, WIRING,
380V POWER DIST

76001-4 | N/A

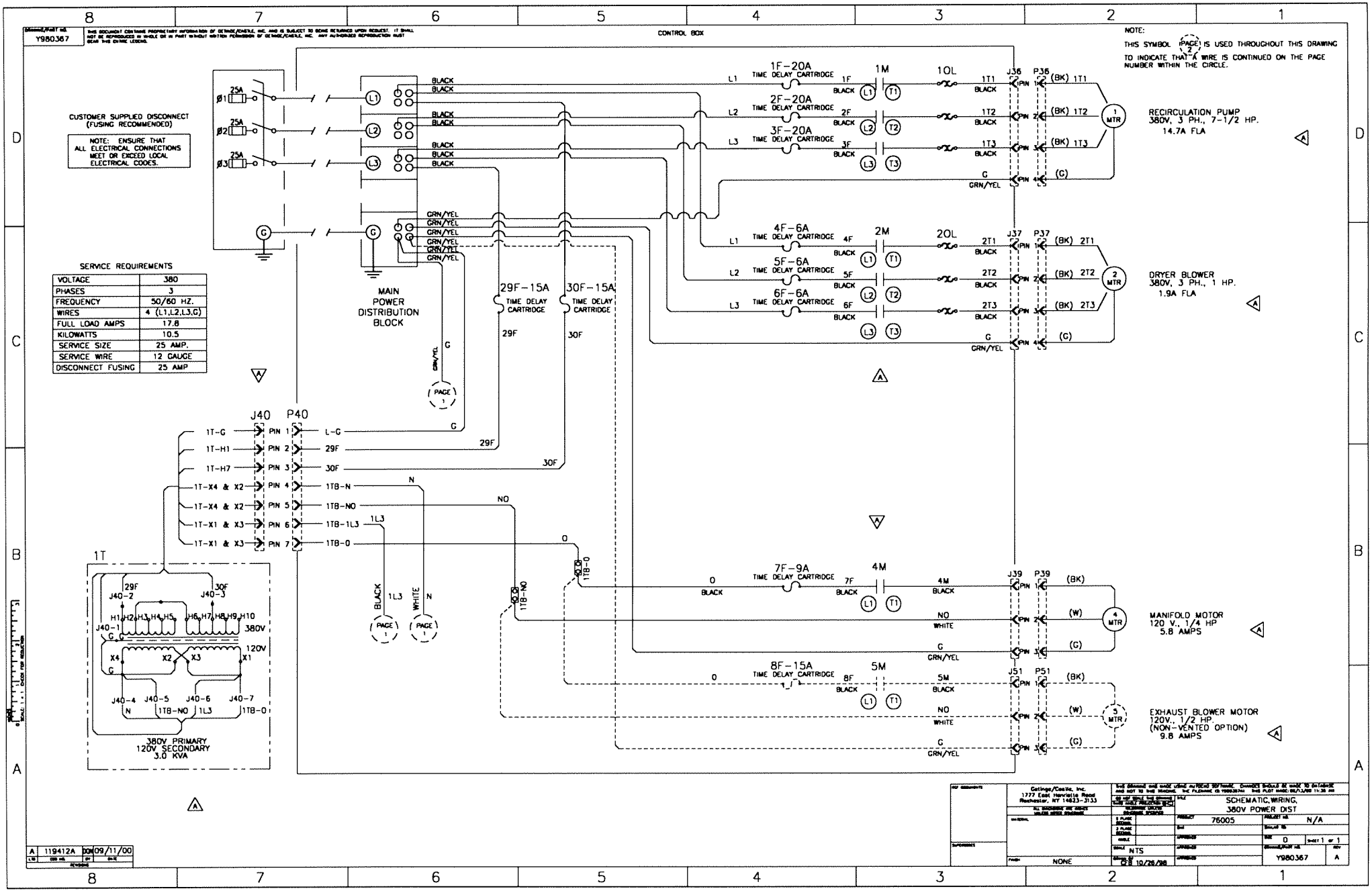
SIZE D | SHEET 1 of 1

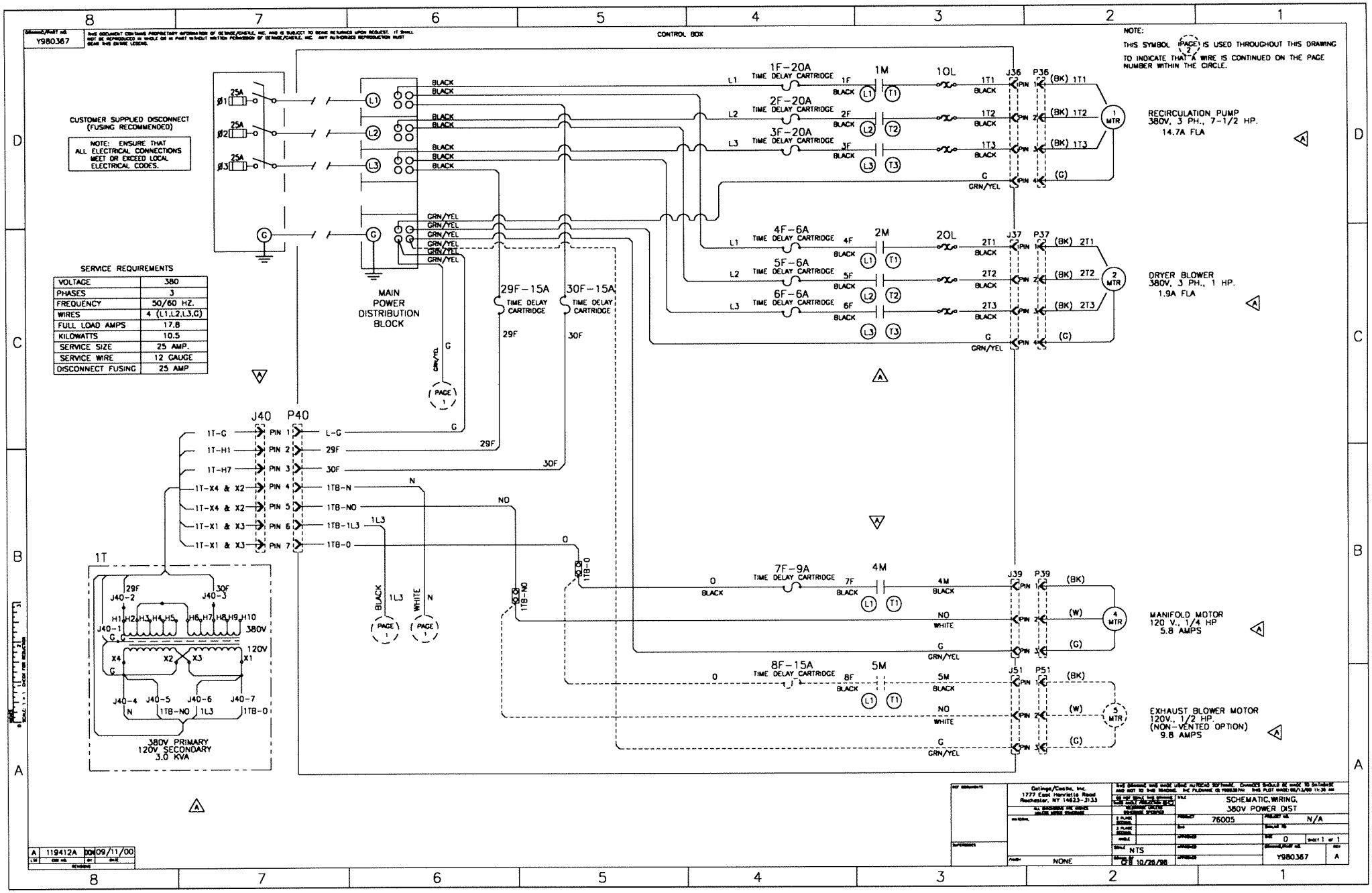
SCALE NTS

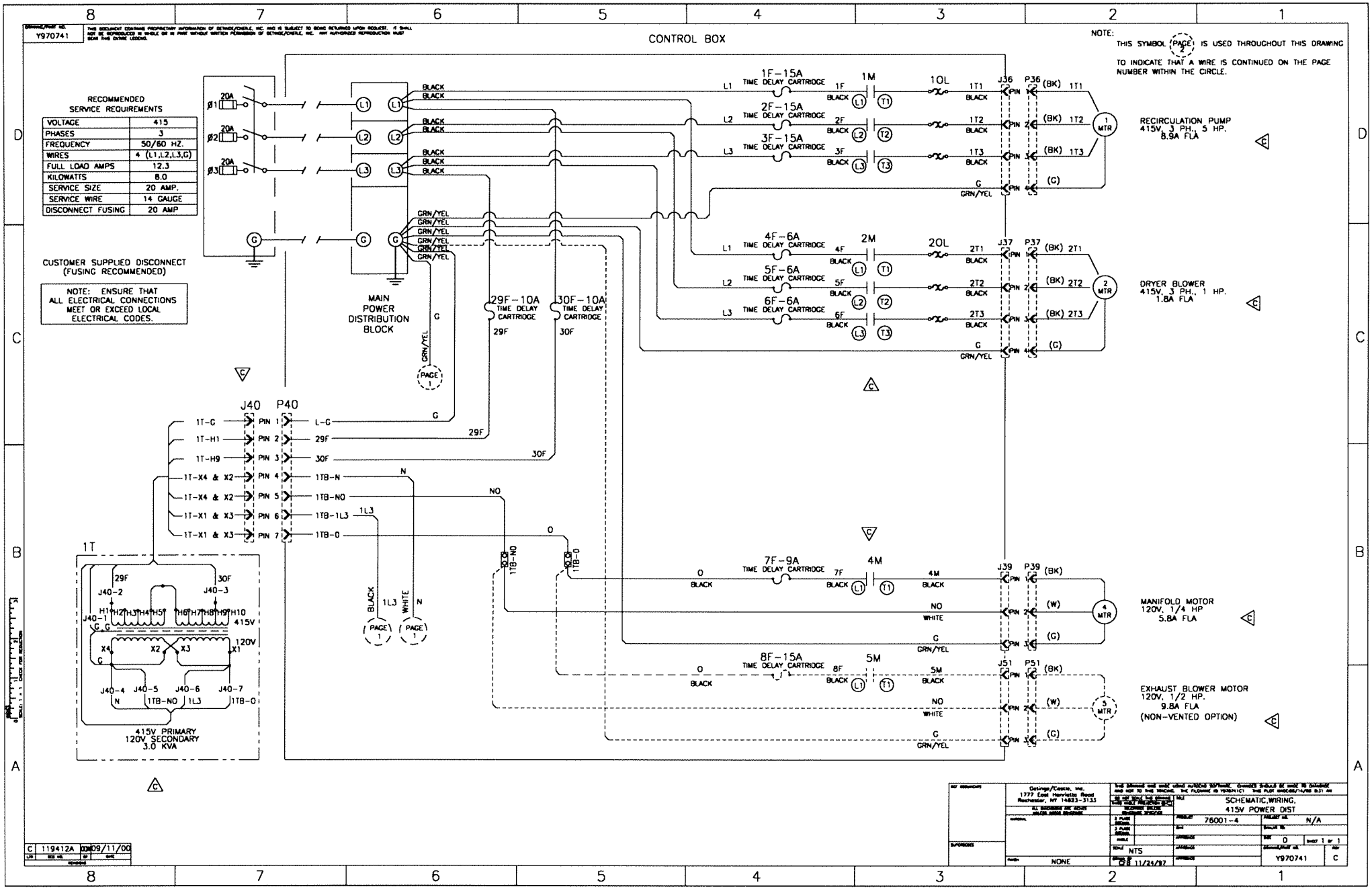
DATE 10/28/98

FINISH NONE

Y980366 | REV A


Y980367
CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
SERVICE REQUIREMENTS
VOLTAGE 380
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 17.8
KILOWATTS 10.5
SERVICE SIZE 25 AMP.
SERVICE WIRE 12 GAUGE
DISCONNECT FUSING 25 AMP
MAIN POWER DISTRIBUTION BLOCK
1F-20A TIME DELAY CARTRIDGE
2F-20A TIME DELAY CARTRIDGE
3F-20A TIME DELAY CARTRIDGE
1M
1OL
RECIRCULATION PUMP 380V, 3 PH., 7-1/2 HP. 14.7A FLA
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
2M
2OL
DRYER BLOWER 380V, 3 PH., 1 HP. 1.9A FLA
29F-15A TIME DELAY CARTRIDGE
30F-15A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
4M
MANIFOLD MOTOR 120 V., 1/4 HP 5.8 AMPS
8F-15A TIME DELAY CARTRIDGE
5M
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8 AMPS
J40 P40
1T
380V PRIMARY 120V SECONDARY 3.0 KVA
Gettinge/Castle, Inc. 1777 East Henrietta Road Rochester, NY 14623-3133
SCHEMATIC, WIRING, 380V POWER DIST
PROJECT 76005
PROJECT NO. N/A
SCALE NTS
SHEET 1 OF 1
FINISH NONE
DATE 10/26/98
Y980367
A 119412A DR 09/11/00
REVISIONS


Y980367
CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
SERVICE REQUIREMENTS
VOLTAGE 380
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 17.8
KILOWATTS 10.5
SERVICE SIZE 25 AMP.
SERVICE WIRE 12 GAUGE
DISCONNECT FUSING 25 AMP
MAIN POWER DISTRIBUTION BLOCK
1F-20A TIME DELAY CARTRIDGE
2F-20A TIME DELAY CARTRIDGE
3F-20A TIME DELAY CARTRIDGE
1M
1OL
RECIRCULATION PUMP 380V, 3 PH., 7-1/2 HP. 14.7A FLA
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
2M
2OL
DRYER BLOWER 380V, 3 PH., 1 HP. 1.9A FLA
29F-15A TIME DELAY CARTRIDGE
30F-15A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
4M
MANIFOLD MOTOR 120 V., 1/4 HP 5.8 AMPS
8F-15A TIME DELAY CARTRIDGE
5M
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8 AMPS
J40 P40
1T
380V PRIMARY 120V SECONDARY 3.0 KVA
SCHEMATIC, WIRING, 380V POWER DIST
Geringer/Combs, Inc.
1777 East Henrietta Road
Rochester, NY 14623-3133
76005
N/A
NTS
NONE
10/26/98
Y980367
A
119412A 09/11/00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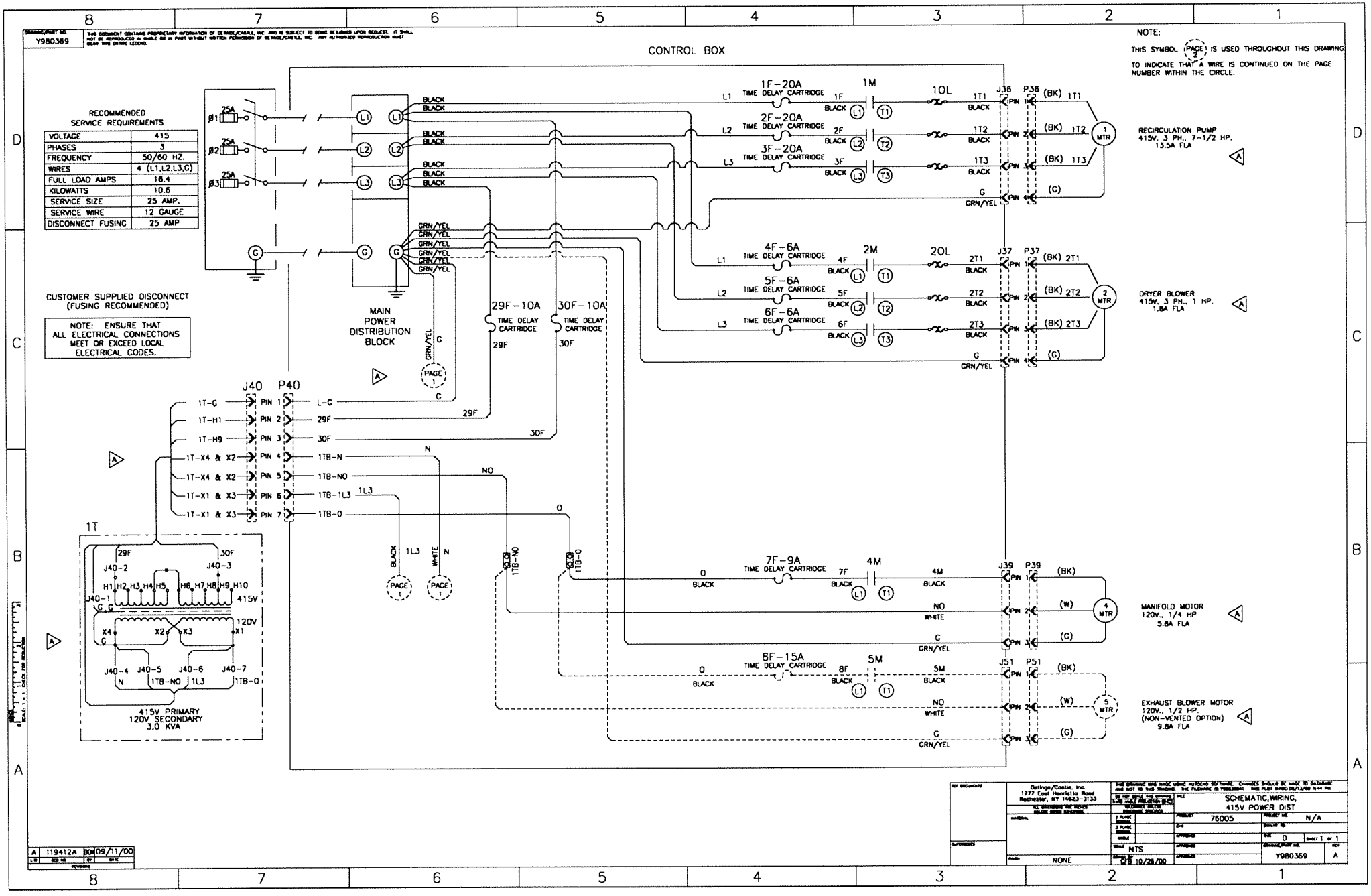
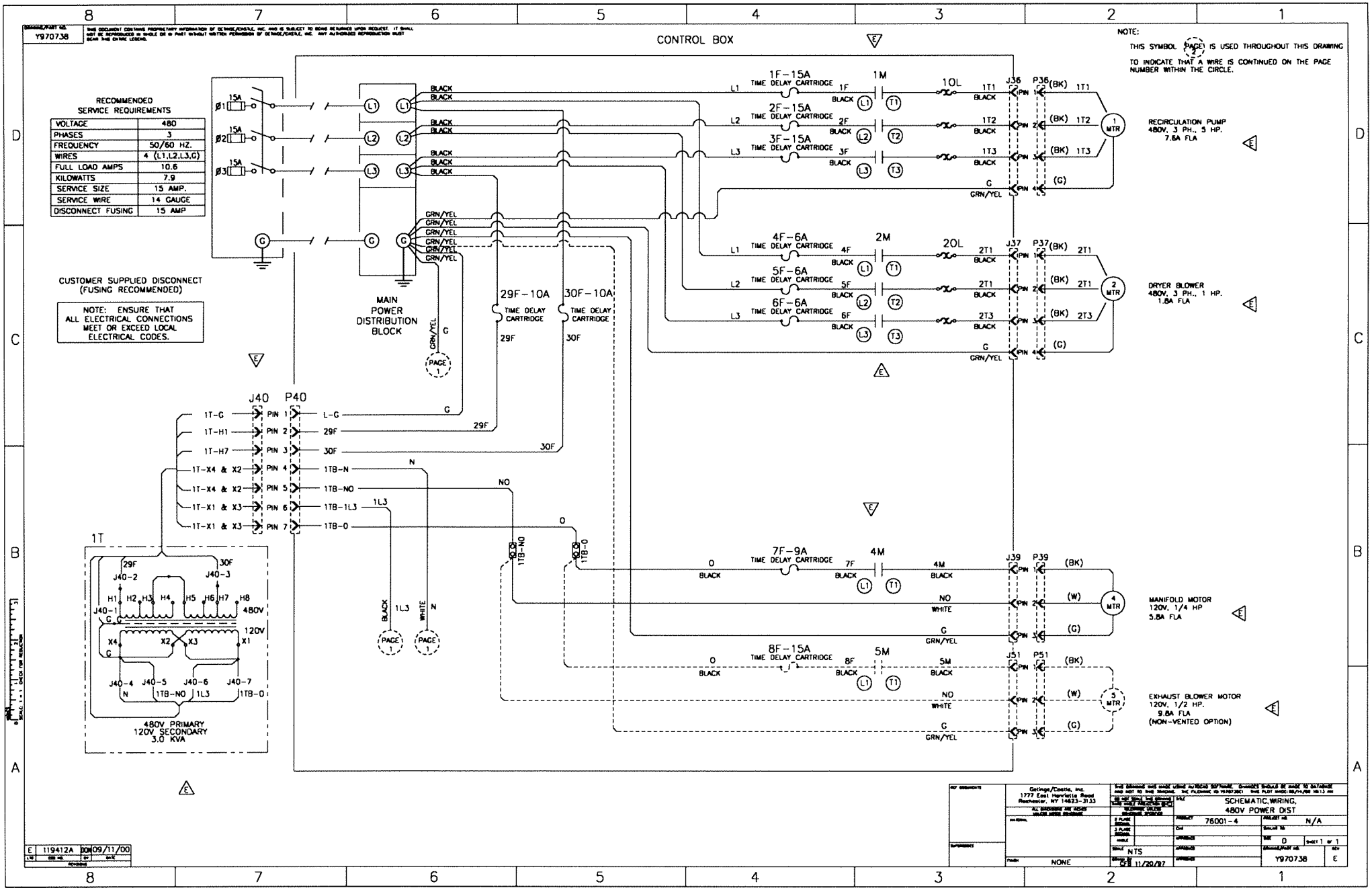
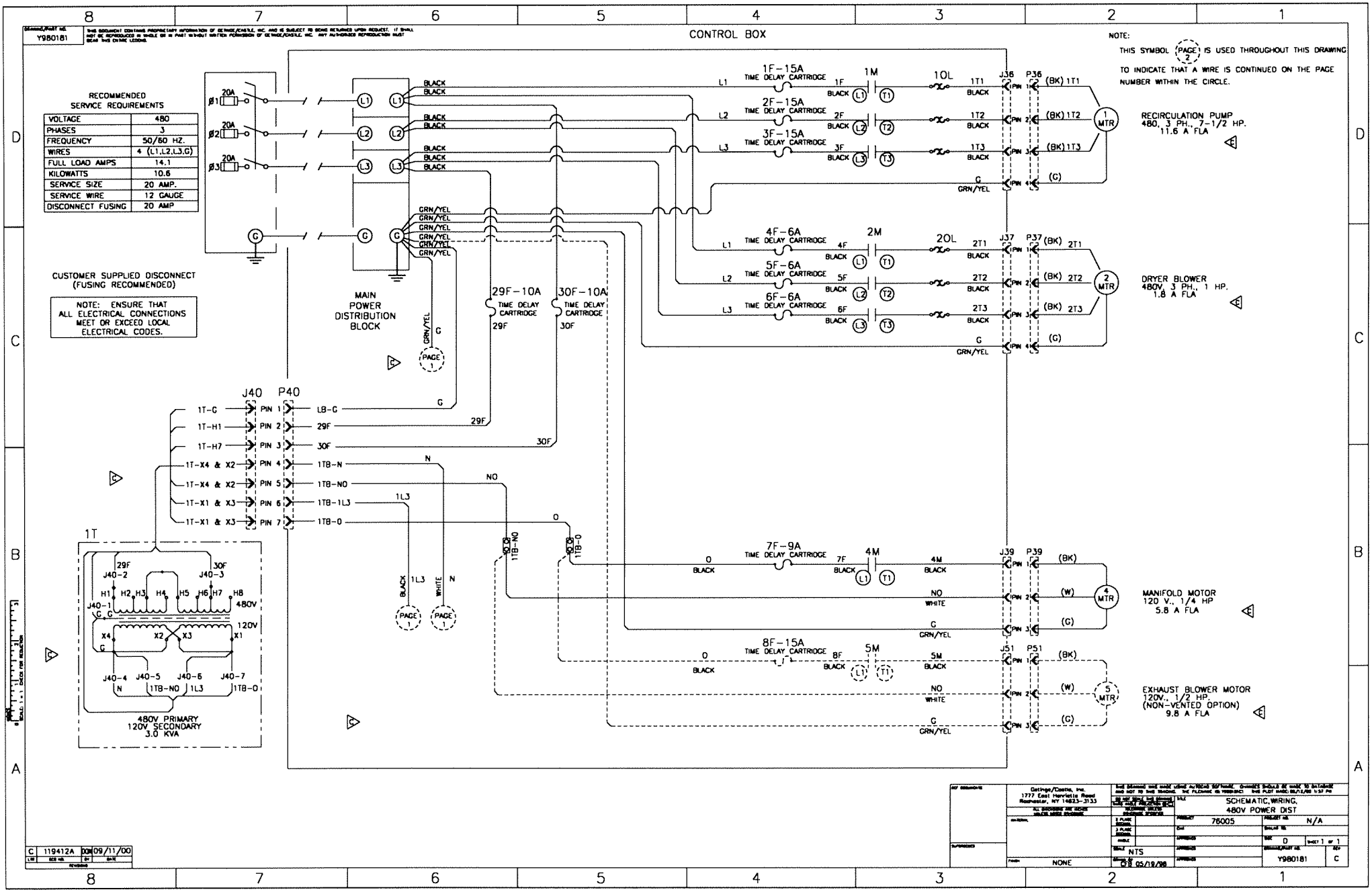
CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
RECOMMENDED SERVICE REQUIREMENTS
VOLTAGE 415
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 12.3
KILOWATTS 8.0
SERVICE SIZE 20 AMP.
SERVICE WIRE 14 GAUGE
DISCONNECT FUSING 20 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-15A TIME DELAY CARTRIDGE
2F-15A TIME DELAY CARTRIDGE
3F-15A TIME DELAY CARTRIDGE
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
29F-10A TIME DELAY CARTRIDGE
30F-10A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
8F-15A TIME DELAY CARTRIDGE
1M
2M
4M
5M
1OL
2OL
J36 P36
J37 P37
J39 P39
J51 P51
J40 P40
1T
RECIRCULATION PUMP 415V, 3 PH., 5 HP. 8.9A FLA
DRYER BLOWER 415V, 3 PH., 1 HP. 1.8A FLA
MANIFOLD MOTOR 120V, 1/4 HP 5.8A FLA
EXHAUST BLOWER MOTOR 120V, 1/2 HP. 9.8A FLA (NON-VENTED OPTION)
415V PRIMARY 120V SECONDARY 3.0 KVA
Getinge/Castle, Inc. 1777 East Henrietta Road Rochester, NY 14623-3133
SCHEMATIC,WIRING, 415V POWER DIST
76001-4
N/A
NTS
NONE
11/24/97
Y970741
C
C 119412A 09/11/00


CONTROL BOX
RECOMMENDED SERVICE REQUIREMENTS
VOLTAGE 415
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 16.4
KILOWATTS 10.6
SERVICE SIZE 25 AMP.
SERVICE WIRE 12 GAUGE
DISCONNECT FUSING 25 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-20A TIME DELAY CARTRIDGE
2F-20A TIME DELAY CARTRIDGE
3F-20A TIME DELAY CARTRIDGE
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
29F-10A TIME DELAY CARTRIDGE
30F-10A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
8F-15A TIME DELAY CARTRIDGE
1M
2M
4M
5M
10L
20L
RECIRCULATION PUMP 415V, 3 PH., 7-1/2 HP. 13.5A FLA
DRYER BLOWER 415V, 3 PH., 1 HP. 1.8A FLA
MANIFOLD MOTOR 120V., 1/4 HP 5.8A FLA
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8A FLA
J40 P40
1T
415V PRIMARY 120V SECONDARY 3.0 KVA
NOTE: THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
Y980369
Delonge/Castle, Inc. 1777 East Henrietta Road Rochester, NY 14623-3133
SCHEMATIC, WIRING, 415V POWER DIST
76005
N/A
NTS
NONE
10/26/00
Y980369
A
119412A 00 09/11/00


CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
RECOMMENDED SERVICE REQUIREMENTS
VOLTAGE 480
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 10.6
KILOWATTS 7.9
SERVICE SIZE 15 AMP.
SERVICE WIRE 14 GAUGE
DISCONNECT FUSING 15 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-15A TIME DELAY CARTRIDGE
2F-15A TIME DELAY CARTRIDGE
3F-15A TIME DELAY CARTRIDGE
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
8F-15A TIME DELAY CARTRIDGE
29F-10A TIME DELAY CARTRIDGE
30F-10A TIME DELAY CARTRIDGE
1M
2M
4M
5M
1OL
2OL
RECIRCULATION PUMP 480V, 3 PH., 5 HP. 7.6A FLA
DRYER BLOWER 480V, 3 PH., 1 HP. 1.8A FLA
MANIFOLD MOTOR 120V, 1/4 HP 5.8A FLA
EXHAUST BLOWER MOTOR 120V, 1/2 HP. 9.8A FLA (NON-VENTED OPTION)
J40 P40
1T
480V PRIMARY 120V SECONDARY 3.0 KVA
J36 P36
J37 P37
J39 P39
J51 P51

| | | |


CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
RECOMMENDED SERVICE REQUIREMENTS
VOLTAGE 480
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 14.1
KILOWATTS 10.6
SERVICE SIZE 20 AMP.
SERVICE WIRE 12 GAUGE
DISCONNECT FUSING 20 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-15A TIME DELAY CARTRIDGE
2F-15A TIME DELAY CARTRIDGE
3F-15A TIME DELAY CARTRIDGE
1M
1OL
RECIRCULATION PUMP 480, 3 PH., 7-1/2 HP. 11.6 A FLA
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
2M
2OL
DRYER BLOWER 480V, 3 PH., 1 HP. 1.8 A FLA
29F-10A TIME DELAY CARTRIDGE
30F-10A TIME DELAY CARTRIDGE
7F-9A TIME DELAY CARTRIDGE
4M
MANIFOLD MOTOR 120 V., 1/4 HP 5.8 A FLA
8F-15A TIME DELAY CARTRIDGE
5M
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8 A FLA
J40 P40
1T
480V PRIMARY 120V SECONDARY 3.0 KVA
SCHEMATIC, WIRING, 480V POWER DIST
Y980181
C 119412A 09/11/00

Y980371

CONTROL BOX

NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.

RECOMMENDED SERVICE REQUIREMENTS

VOLTAGE	600
PHASES	3
FREQUENCY	50/60 HZ.
WIRES	4 (L1,L2,L3,G)
FULL LOAD AMPS	8.6
KILOWATTS	8.0
SERVICE SIZE	15 AMP.
SERVICE WIRE	14 GAUGE
DISCONNECT FUSING	15 AMP

CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)

NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.

MAIN POWER DISTRIBUTION BLOCK

1F-15A TIME DELAY CARTRIDGE — 1M — 1OL — J36 P36 — RECIRCULATION PUMP 600V, 3 PH., 5 HP. 6.2A FLA (1 MTR)

2F-15A TIME DELAY CARTRIDGE

3F-15A TIME DELAY CARTRIDGE

4F-6A TIME DELAY CARTRIDGE — 2M — 2OL — J37 P37 — DRYER BLOWER 600V, 3 PH., 1 HP. 1.2A FLA (2 MTR)

5F-6A TIME DELAY CARTRIDGE

6F-6A TIME DELAY CARTRIDGE

29F-10A TIME DELAY CARTRIDGE

30F-10A TIME DELAY CARTRIDGE

7F-9A TIME DELAY CARTRIDGE — 4M — J39 P39 — MANIFOLD MOTOR 120V, 1/4 HP 5.8A FLA (4 MTR)

8F-15A TIME DELAY CARTRIDGE — 5M — J51 P51 — EXHAUST BLOWER MOTOR 120V, 1/2 HP. 9.8A FLA (NON-VENTED OPTION) (5 MTR)

J40 P40

1T-G	PIN 1	L-G	G
1T-H1	PIN 2	29F	29F
1T-H4	PIN 3	30F	30F
1T-X4 & X2	PIN 4	1TB-N	N
1T-X4 & X2	PIN 5	1TB-NO	NO
1T-X1 & X3	PIN 6	1TB-1L3	1L3
1T-X1 & X3	PIN 7	1TB-O	O

1T

600V PRIMARY
120V SECONDARY
3.0 KVA

A	119412A	DD 09/11/00

Cutler/Castle, Inc.
1777 East Henrietta Road
Rochester, NY 14623-3133

SCHEMATIC, WIRING, 600V POWER DIST

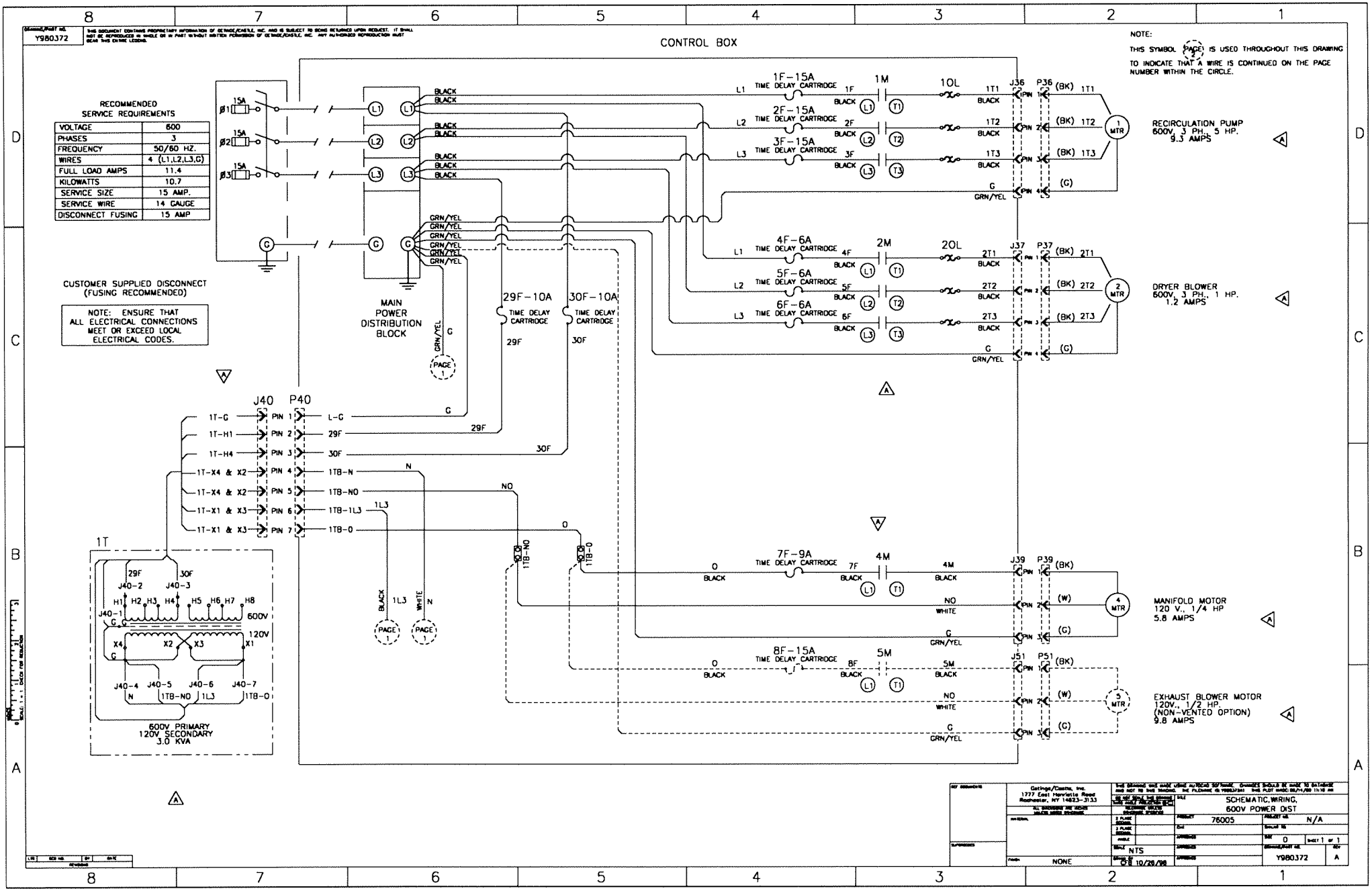
PROJECT 76001-4 — PROJECT NO. N/A

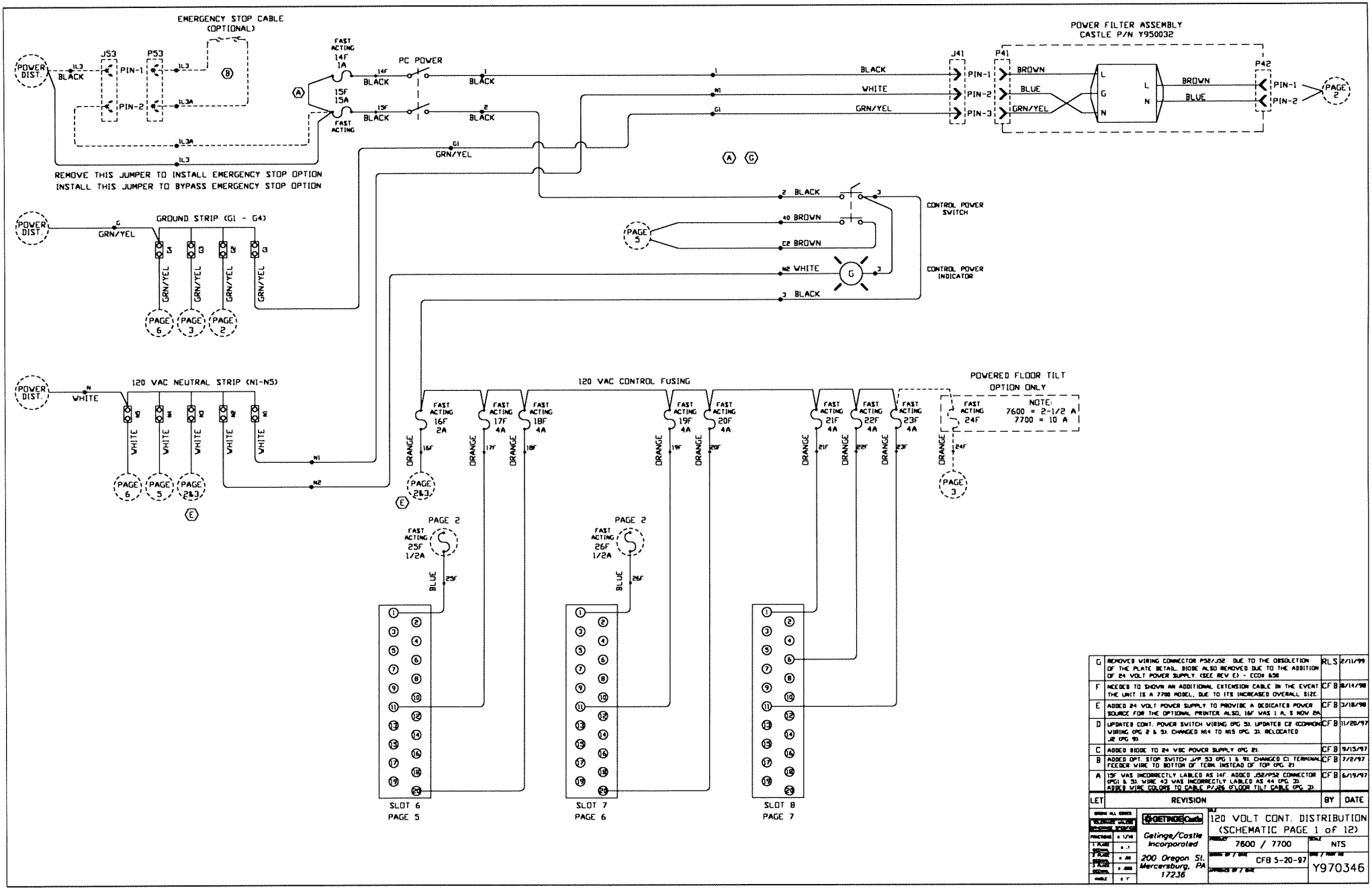
SCALE NTS — SHEET 1 of 1 — SIZE D

DRAWING NO. Y980371 — REV A

FINISH NONE

DRAWN CJB 10/26/98


CONTROL BOX
NOTE:
THIS SYMBOL (PAGE 2) IS USED THROUGHOUT THIS DRAWING TO INDICATE THAT A WIRE IS CONTINUED ON THE PAGE NUMBER WITHIN THE CIRCLE.
RECOMMENDED SERVICE REQUIREMENTS
VOLTAGE 600
PHASES 3
FREQUENCY 50/60 HZ.
WIRES 4 (L1,L2,L3,G)
FULL LOAD AMPS 11.4
KILOWATTS 10.7
SERVICE SIZE 15 AMP.
SERVICE WIRE 14 GAUGE
DISCONNECT FUSING 15 AMP
CUSTOMER SUPPLIED DISCONNECT (FUSING RECOMMENDED)
NOTE: ENSURE THAT ALL ELECTRICAL CONNECTIONS MEET OR EXCEED LOCAL ELECTRICAL CODES.
MAIN POWER DISTRIBUTION BLOCK
1F-15A TIME DELAY CARTRIDGE
2F-15A TIME DELAY CARTRIDGE
3F-15A TIME DELAY CARTRIDGE
1M
1OL
RECIRCULATION PUMP 600V, 3 PH., 5 HP. 9.3 AMPS
4F-6A TIME DELAY CARTRIDGE
5F-6A TIME DELAY CARTRIDGE
6F-6A TIME DELAY CARTRIDGE
2M
2OL
DRYER BLOWER 600V, 3 PH., 1 HP. 1.2 AMPS
29F-10A TIME DELAY CARTRIDGE
30F-10A TIME DELAY CARTRIDGE
J40 P40
1T
600V PRIMARY 120V SECONDARY 3.0 KVA
7F-9A TIME DELAY CARTRIDGE
4M
MANIFOLD MOTOR 120 V., 1/4 HP 5.8 AMPS
8F-15A TIME DELAY CARTRIDGE
5M
EXHAUST BLOWER MOTOR 120V., 1/2 HP. (NON-VENTED OPTION) 9.8 AMPS
SCHEMATIC, WIRING, 600V POWER DIST
Y980372



LET	REVISION	BY	DATE
G	REMOVED WIRING CONNECTOR P52/J52 DUE TO THE OBSOLETION OF THE PLATE DETAIL. DIODE ALSO REMOVED DUE TO THE ADDITION OF 24 VOLT POWER SUPPLY. (SEE REV E) - ECO# 650	RLS	2/11/99
F	NCCED TO SHOWN AN ADDITIONAL EXTENSION CABLE IN THE EVENT THE UNIT IS A 7700 MODEL, DUE TO ITS INCREASED OVERALL SIZE.	CFB	8/14/98
E	ADDED 24 VOLT POWER SUPPLY TO PROVIDE A DEDICATED POWER SOURCE FOR THE OPTIONAL PRINTER ALSO, 16F WAS 1 A, IS NOW 2A.	CFB	3/18/98
D	UPDATED CONT. POWER SWITCH WIRING (PG 5). UPDATED C2 (COMMON) WIRING (PG 2 & 5). CHANGED N14 TO N13 (PG. 3). RELOCATED J2 (PG 9).	CFB	11/20/97
C	ADDED DIODE TO 24 VDC POWER SUPPLY (PG 2).	CFB	9/15/97
B	ADDED OPT. STOP SWITCH J/P 53 (PG 1 & 9). CHANGED C1 TERMINAL FEEDER WIRE TO BOTTOM OF TERM INSTEAD OF TOP (PG. 2)	CFB	7/2/97
A	15F WAS INCORRECTLY LABLED AS 14F. ADDED J52/P52 CONNECTOR (PG) & 5). WIRE 43 WAS INCORRECTLY LABLED AS 44 (PG 2). ADDED WIRE COLORS TO CABLE P/JR6 (FLOOR TILT CABLE (PG 2).	CFB	6/19/97

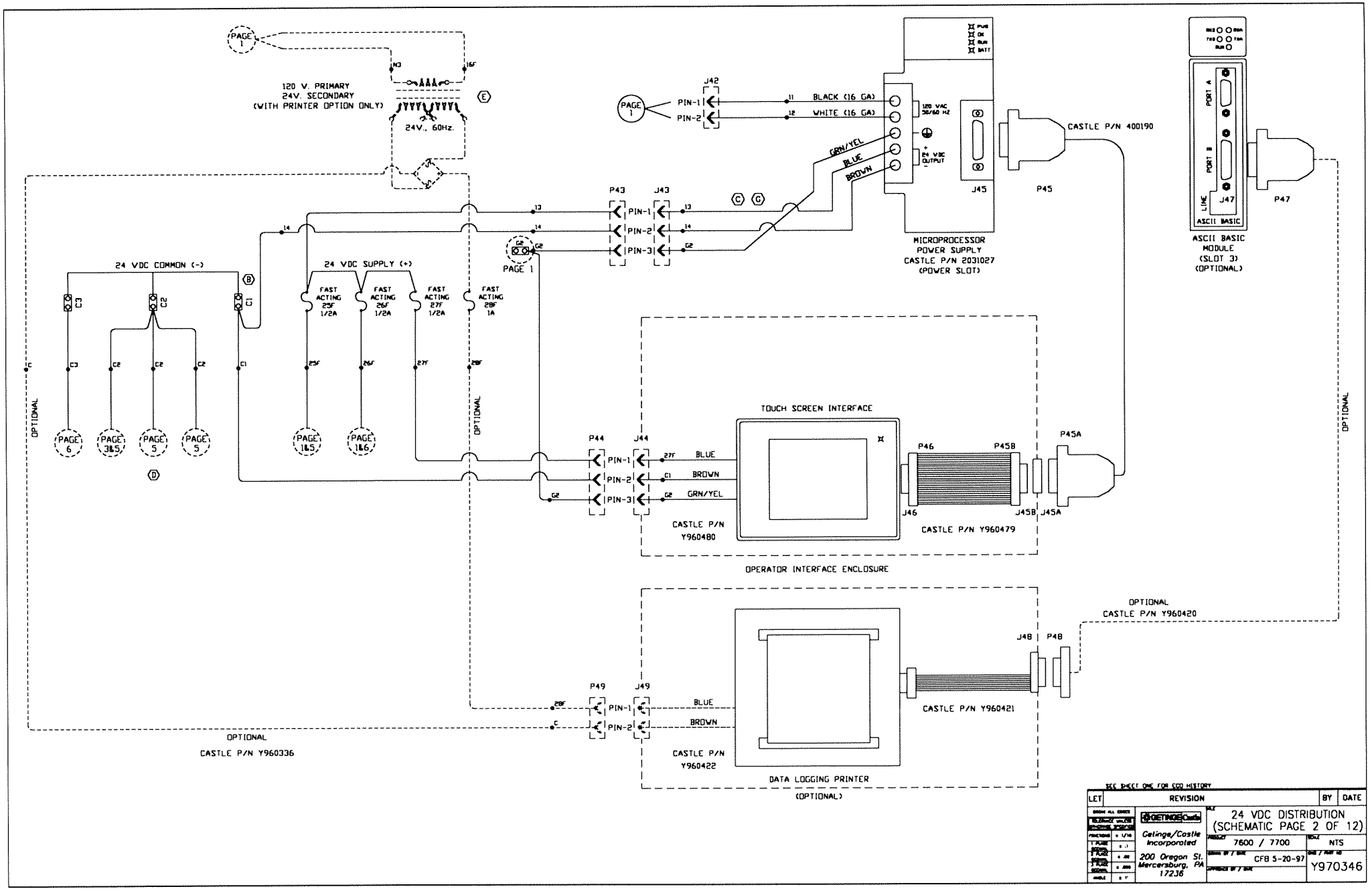
DRAWING ALL DIMS	GETINGE/Castle
TOLERANCE UNLESS SPECIFIED	Gelinge/Castle Incorporated
FRACTIONS ± 1/64	200 Oregon St. Mercersburg, PA 17236
1 PLACE ± .1	
2 PLACE ± .03	
3 PLACE ± .005	
ANGLES ± 1°	

120 VOLT CONT. DISTRIBUTION (SCHEMATIC PAGE 1 of 12)

PRODUCT 7600 / 7700 — SCALE NTS

DRAWN BY / DATE CFB 5-20-97 — DWG / PART NO. Y970346

APPROVED BY / DATE



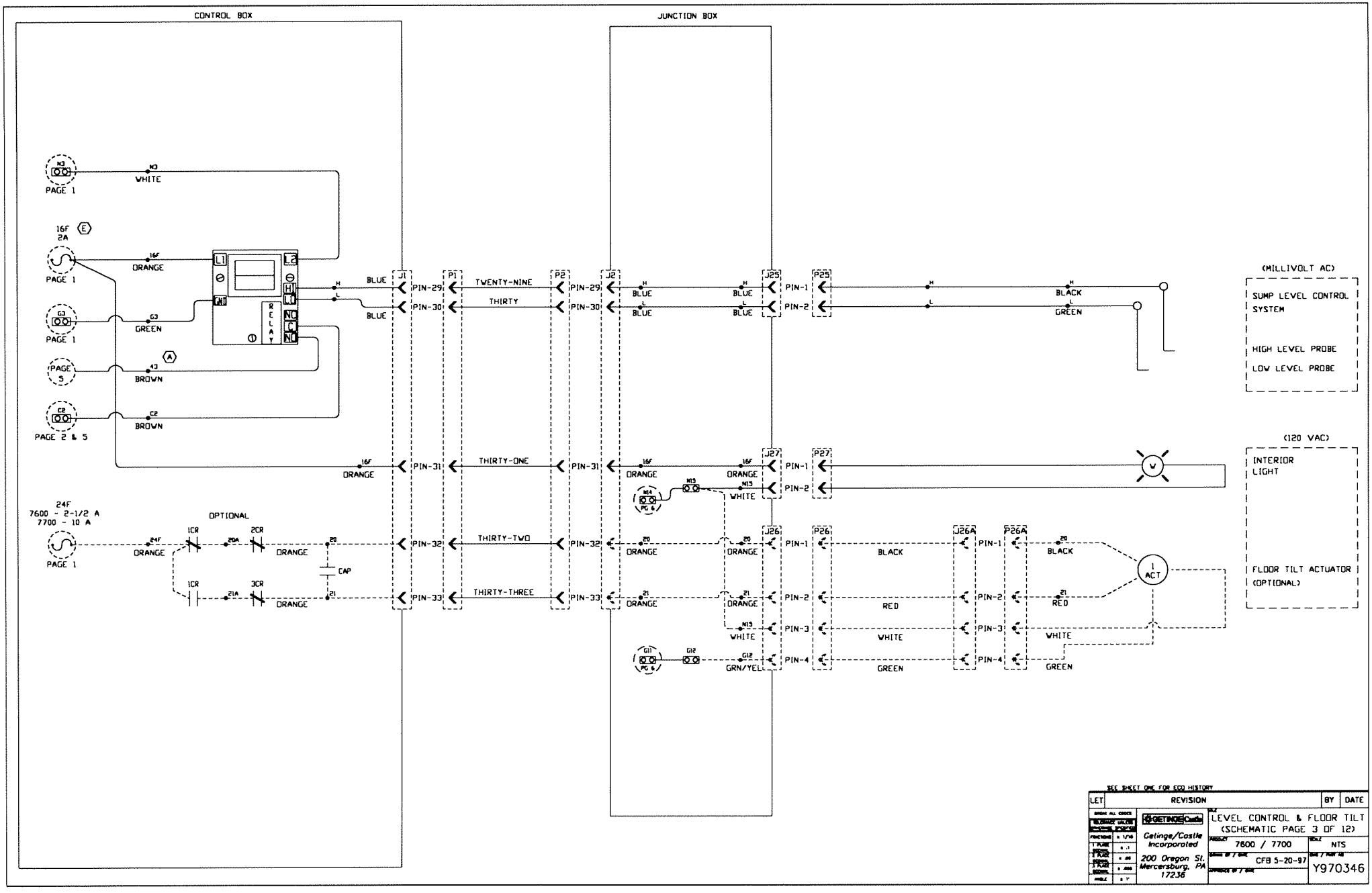
SEE SHEET ONE FOR ECO HISTORY

LET	REVISION	BY	DATE

Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236

24 VDC DISTRIBUTION
(SCHEMATIC PAGE 2 OF 12)

PROJECT: 7600 / 7700
SCALE: NTS
DRAWN BY / DATE: CFB 5-20-97
DWG / PART NO: Y970346
APPROVED BY / DATE:



SEE SHEET ONE FOR ECO HISTORY

LET	REVISION	BY	DATE

Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236

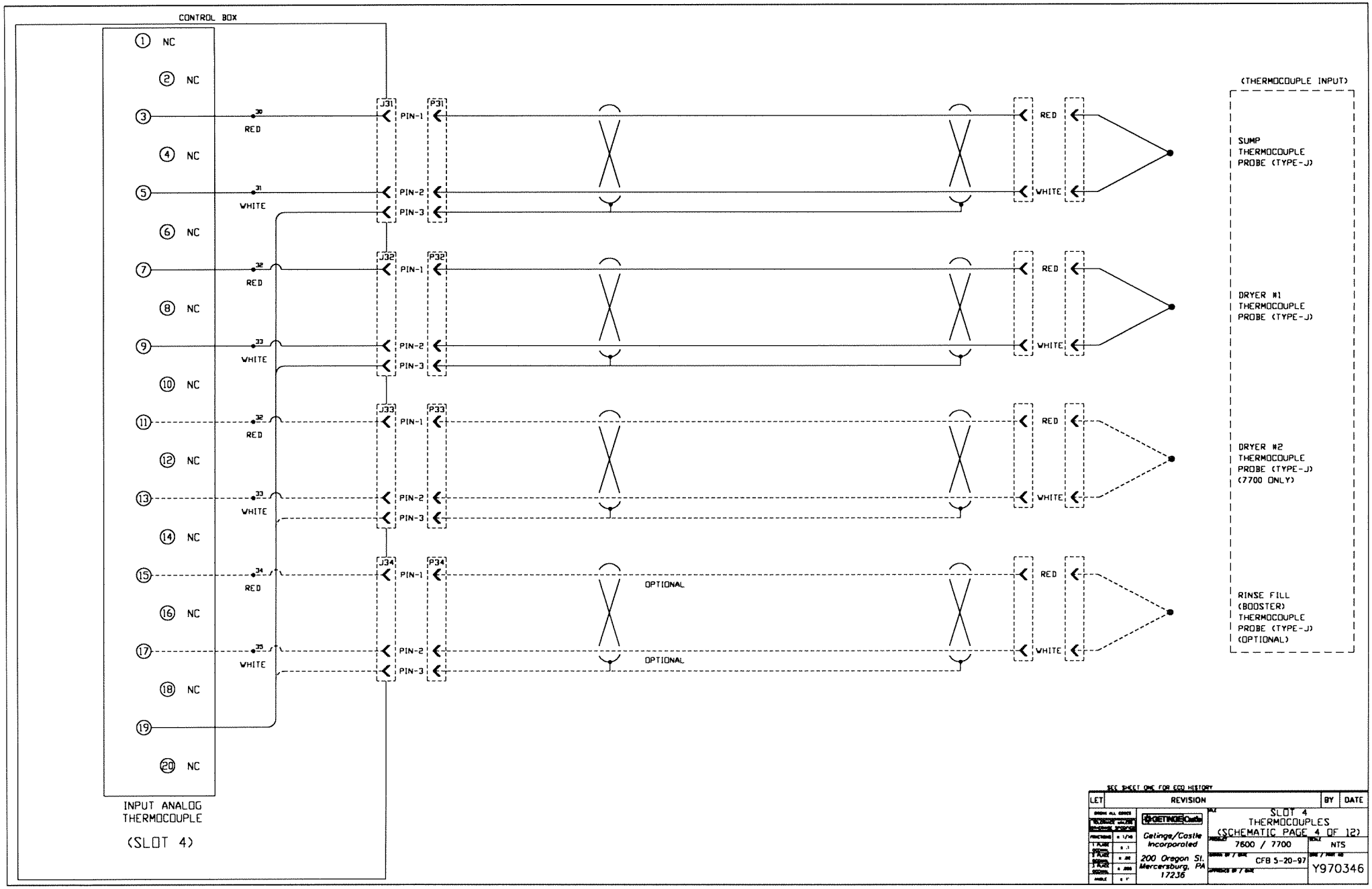
LEVEL CONTROL & FLOOR TILT
(SCHEMATIC PAGE 3 OF 12)

ASSY 7600 / 7700

SCALE NTS

DRAWN BY / DATE CFB 5-20-97

DRAWING NO / REV NO Y970346

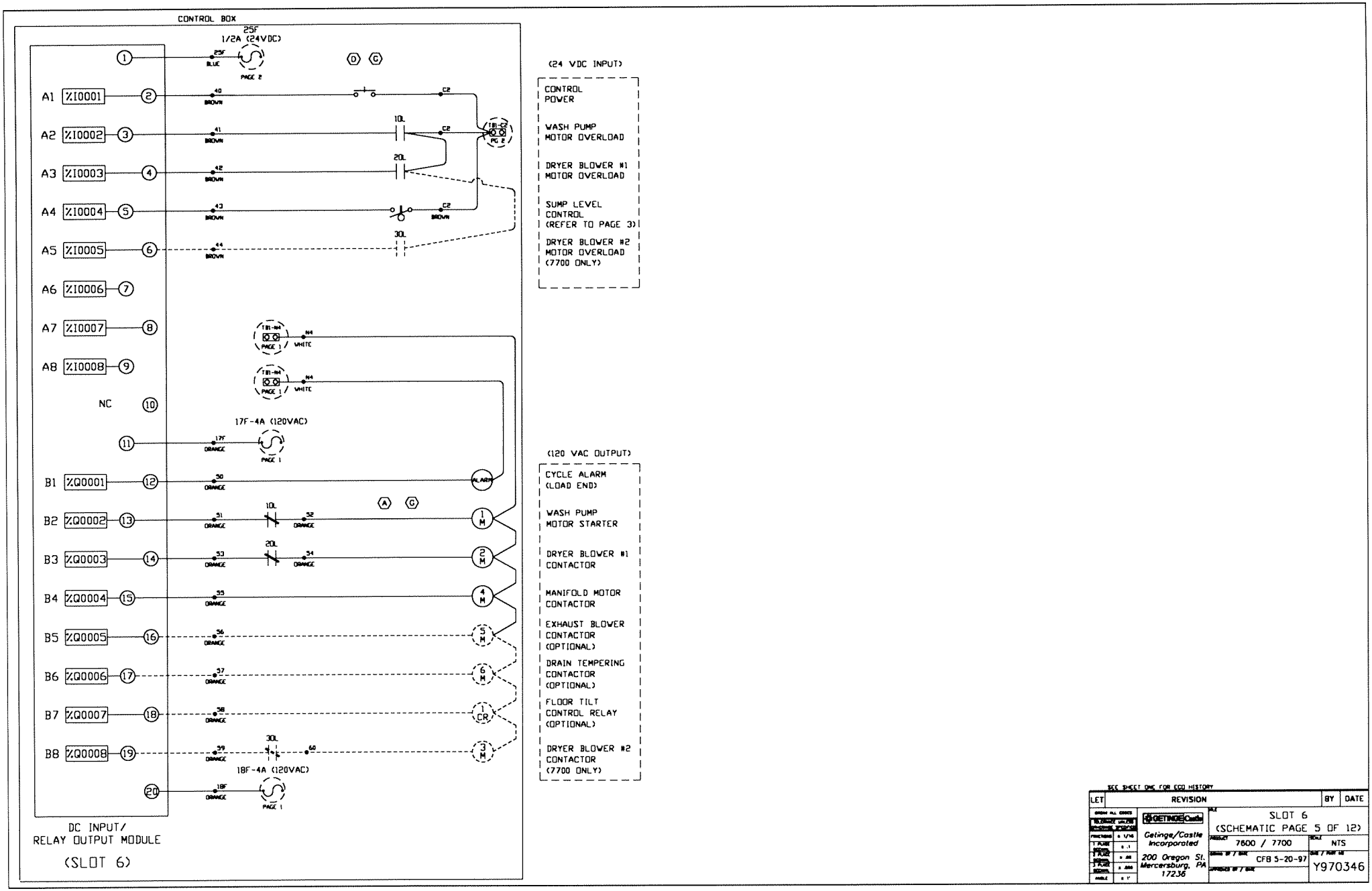


SEE SHEET ONE FOR ECO HISTORY

LET	REVISION	BY	DATE

Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236

TITLE: SLOT 4 THERMOCOUPLES (SCHEMATIC PAGE 4 OF 12)
PRODUCT: 7600 / 7700
SCALE: NTS
CFB 5-20-97
Y970346



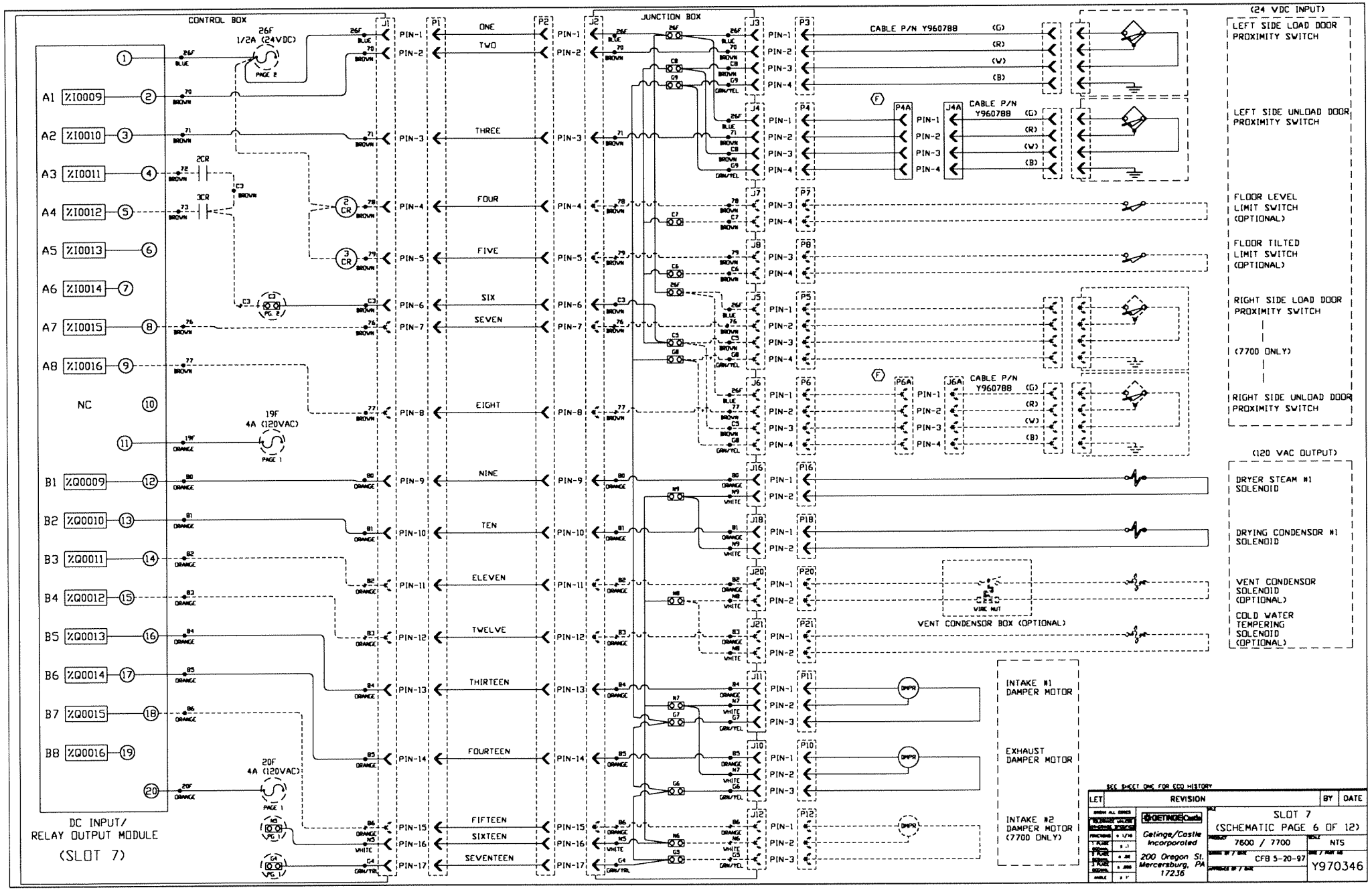
SEE SHEET ONE FOR ECO HISTORY

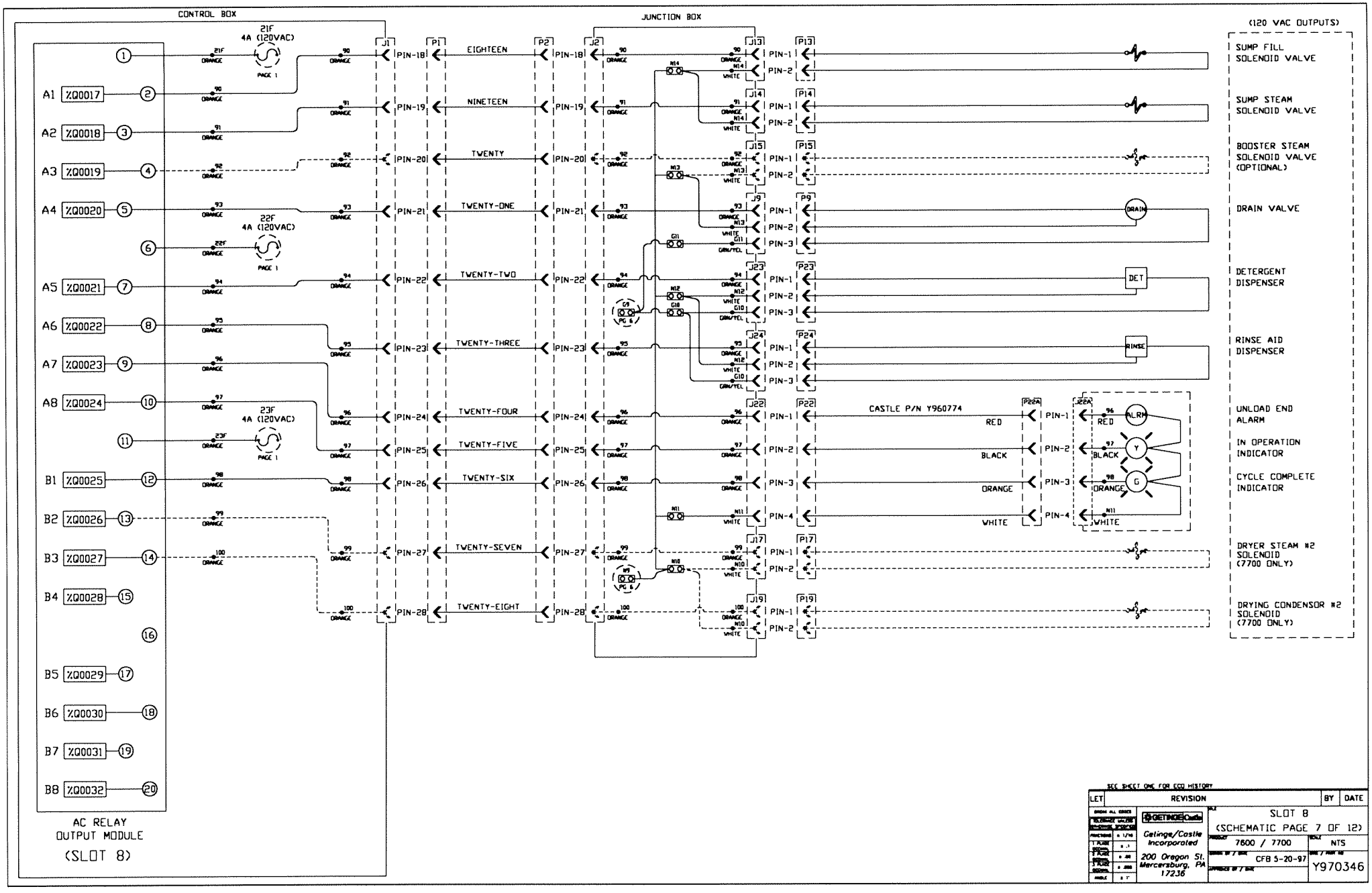
LET	REVISION	BY	DATE

Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236

SLOT 6
(SCHEMATIC PAGE 5 OF 12)

PRODUCT 7600 / 7700
SCALE NTS
CFB 5-20-97
Y970346


CONTROL BOX
JUNCTION BOX
DC INPUT/
RELAY OUTPUT MODULE
(SLOT 7)
(24 VDC INPUT)
LEFT SIDE LOAD DOOR PROXIMITY SWITCH
LEFT SIDE UNLOAD DOOR PROXIMITY SWITCH
FLOOR LEVEL LIMIT SWITCH (OPTIONAL)
FLOOR TILTED LIMIT SWITCH (OPTIONAL)
RIGHT SIDE LOAD DOOR PROXIMITY SWITCH
(7700 ONLY)
RIGHT SIDE UNLOAD DOOR PROXIMITY SWITCH
(120 VAC OUTPUT)
DRYER STEAM #1 SOLENOID
DRYING CONDENSOR #1 SOLENOID
VENT CONDENSOR SOLENOID (OPTIONAL)
COLD WATER TEMPERING SOLENOID (OPTIONAL)
VENT CONDENSOR BOX (OPTIONAL)
INTAKE #1 DAMPER MOTOR
EXHAUST DAMPER MOTOR
INTAKE #2 DAMPER MOTOR (7700 ONLY)
CABLE P/N Y960788
SLOT 7
(SCHEMATIC PAGE 6 OF 12)
7600 / 7700
NTS
CFB 5-20-97
Y970346
Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236


CONTROL BOX
JUNCTION BOX
(120 VAC OUTPUTS)
21F
4A (120VAC)
22F
4A (120VAC)
23F
4A (120VAC)
A1 XQ0017
A2 XQ0018
A3 XQ0019
A4 XQ0020
A5 XQ0021
A6 XQ0022
A7 XQ0023
A8 XQ0024
B1 XQ0025
B2 XQ0026
B3 XQ0027
B4 XQ0028
B5 XQ0029
B6 XQ0030
B7 XQ0031
B8 XQ0032
AC RELAY
OUTPUT MODULE
(SLOT 8)
EIGHTEEN
NINETEEN
TWENTY
TWENTY-ONE
TWENTY-TWO
TWENTY-THREE
TWENTY-FOUR
TWENTY-FIVE
TWENTY-SIX
TWENTY-SEVEN
TWENTY-EIGHT
SUMP FILL SOLENOID VALVE
SUMP STEAM SOLENOID VALVE
BOOSTER STEAM SOLENOID VALVE (OPTIONAL)
DRAIN VALVE
DETERGENT DISPENSER
RINSE AID DISPENSER
UNLOAD END ALARM
IN OPERATION INDICATOR
CYCLE COMPLETE INDICATOR
DRYER STEAM #2 SOLENOID (7700 ONLY)
DRYING CONDENSOR #2 SOLENOID (7700 ONLY)
CASTLE P/N Y960774
RED
BLACK
ORANGE
WHITE
ALRM
DET
RINSE
SEE SHEET ONE FOR ECO HISTORY
LET
REVISION
BY
DATE
SLOT 8
(SCHEMATIC PAGE 7 OF 12)
Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236
7600 / 7700
NTS
CFB 5-20-97
Y970346

7600 ONLY

THERMOCOUPLE
CHANNEL 1 SUMP TEMP.
CHANNEL 2 DRYER TEMP.
CHANNEL 3
CHANNEL 4 RINSE FILL (OPTIONAL)
SLOT 4

THERMOCOUPLE MODULE
HE693THM406

24 VDC INPUT	
A1	CONTROL POWER
A2	WASH PUMP MOTOR OVERLOAD
A3	DRYER BLOWER MOTOR OVERLOAD
A4	SUMP LEVEL CONTROL
A5	
A6	
A7	
A8	
120 VAC OUTPUT	
B1	LOAD END ALARM
B2	WASH PUMP CONTACTOR
B3	DRYER BLOWER CONTACTOR
B4	MANIFOLD MOTOR CONTACTOR
B5	EXHAUST BLOWER CONTACTOR
B6	DRAIN TEMPERING CONTACTOR
B7	FLOOR TILT CONTROL RELAY
B8	
SLOT 6	

DC IN/RELAY OUT MODULE
IC693MDR390

24 VDC INPUT	
A1	LT. LOAD DOOR PROX. SWITCH
A2	LT. UNLOAD DOOR PROX. SWITCH
A3	FLOOR LEVEL LIMIT SWITCH
A4	FLOOR TILTED LIMIT SWITCH
A5	
A6	
A7	
A8	
120 VAC OUTPUT	
B1	DRYER STEAM SOLENOID VALVE
B2	DRYING COND SOLENOID VALVE
B3	VENT CONDENSOR SOLENOID VALVE
B4	COLD WATER SOLENOID VALVE
B5	INTAKE DAMPER MOTOR
B6	EXHAUST DAMPER MOTOR
B7	
B8	
SLOT 7	

DC IN/RELAY OUT MODULE
IC693MDR390

120 VAC OUTPUT	
A1	SUMP FILL SOLENOID VALVE
A2	SUMP STEAM SOLENOID VALVE
A3	BOOSTER STEAM SOLENOID VALVE
A4	DRAIN VALVE
A5	DETERGENT DISPENSER
A6	RINSE AGENT DISPENSER
A7	UNLOAD END ALARM
A8	IN OPERATION INDICATOR
B1	CYCLE COMPLETE INDICATOR
B2	
B3	
B4	
B5	
B6	
B7	
B8	
SLOT 8	

AC RELAY OUT MODULE
IC693MDL940

7700 ONLY

THERMOCOUPLE
CHANNEL 1 SUMP TEMP.
CHANNEL 2 DRYER #1 TEMP.
CHANNEL 3 DRYER #2 TEMP.
CHANNEL 4 RINSE FILL (OPTIONAL)
SLOT 4

24 VDC INPUT	
A1	CONTROL POWER
A2	WASH PUMP MOTOR OVERLOAD
A3	DRYER BLOWER #1 MOTOR OVERLOAD
A4	SUMP LEVEL CONTROL
A5	DRYER BLOWER #2 MOTOR OVERLOAD
A6	
A7	
A8	
120 VAC OUTPUT	
B1	LOAD END ALARM
B2	WASH PUMP CONTACTOR
B3	DRYER BLOWER #1 CONTACTOR
B4	MANIFOLD MOTOR CONTACTOR
B5	EXHAUST BLOWER CONTACTOR
B6	DRAIN TEMPERING CONTACTOR
B7	FLOOR TILT CONTROL RELAY
B8	DRYER BLOWER #2 CONTACTOR
SLOT 6	

24 VDC INPUT	
A1	LT. LOAD DOOR PROX. SWITCH
A2	LT. UNLOAD DOOR PROX. SWITCH
A3	FLOOR LEVEL LIMIT SWITCH
A4	FLOOR TILTED LIMIT SWITCH
A5	
A6	
A7	RT. LOAD DOOR PROX. SWITCH
A8	RT. UNLOAD DOOR PROX. SWITCH
120 VAC OUTPUT	
B1	DRYER STEAM #1 SOLENOID VALVE
B2	DRYING COND. #1 SOLENOID VALVE
B3	VENT CONDENSOR SOLENOID VALVE
B4	COLD WATER SOLENOID VALVE
B5	INTAKE #1 DAMPER MOTOR
B6	EXHAUST DAMPER MOTOR
B7	INTAKE #2 DAMPER MOTOR
B8	
SLOT 7	

120 VAC OUTPUT	
A1	SUMP FILL SOLENOID VALVE
A2	SUMP STEAM SOLENOID VALVE
A3	BOOSTER STEAM SOLENOID VALVE
A4	DRAIN VALVE
A5	DETERGENT DISPENSER
A6	RINSE AGENT DISPENSER
A7	UNLOAD END ALARM
A8	IN OPERATION INDICATOR
B1	CYCLE COMPLETE INDICATOR
B2	DRYER STEAM #2 SOLENOID VALVE
B3	DRYING COND. #2 SOLENOID VALVE
B4	
B5	
B6	
B7	
B8	
SLOT 8	

SEE SHEET ONE FOR ECO HISTORY

LET	REVISION	BY	DATE

BREAK ALL EDGES

TOLERANCE UNLESS OTHERWISE SPECIFIED	
FRACTIONS	± 1/16
1 PLACE DECIMAL	± .1
2 PLACE DECIMAL	± .02
3 PLACE DECIMAL	± .005
ANGLE	± 1°

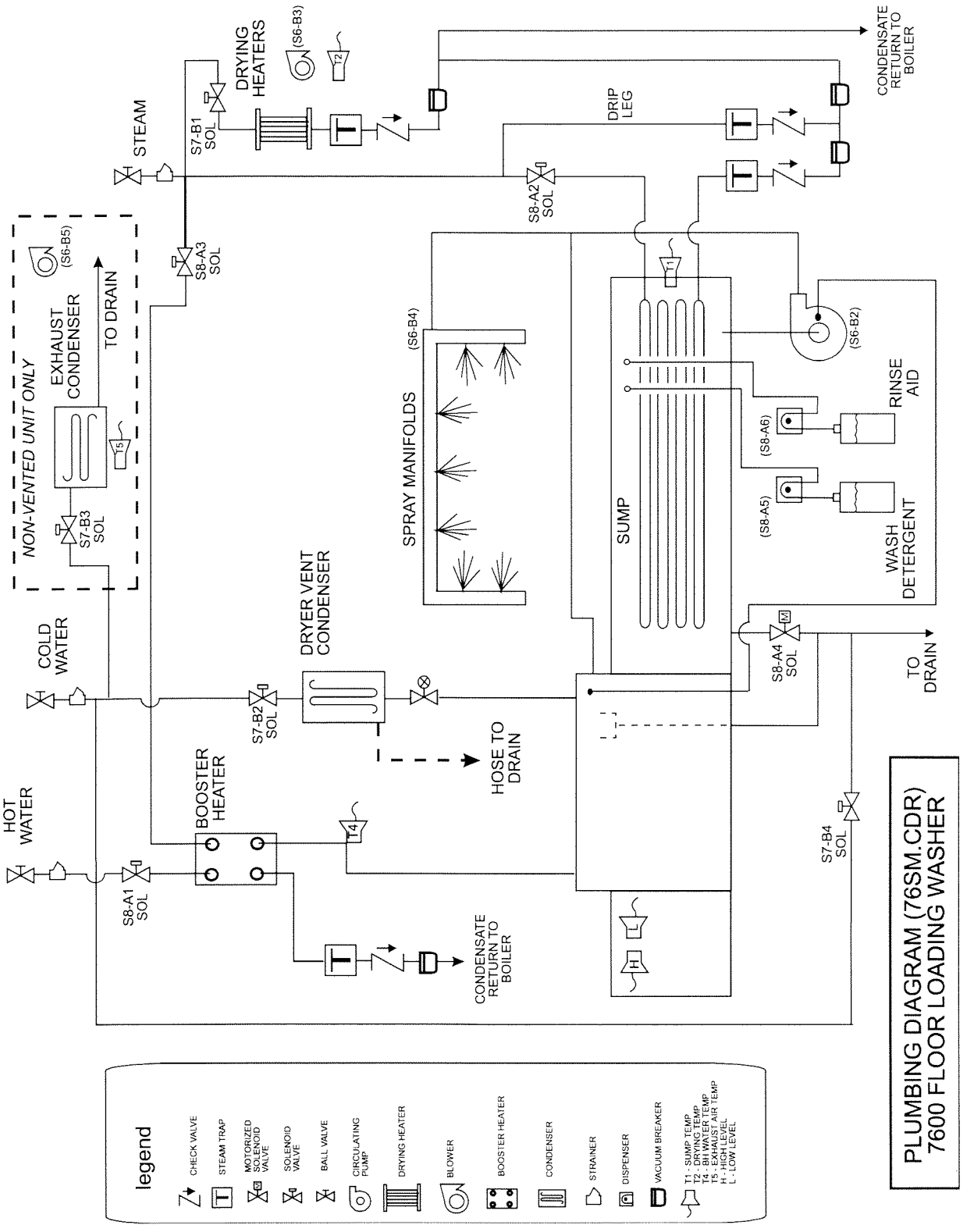
GETINGE Castle

Getinge/Castle Incorporated
200 Oregon St.
Mercersburg, PA
17236

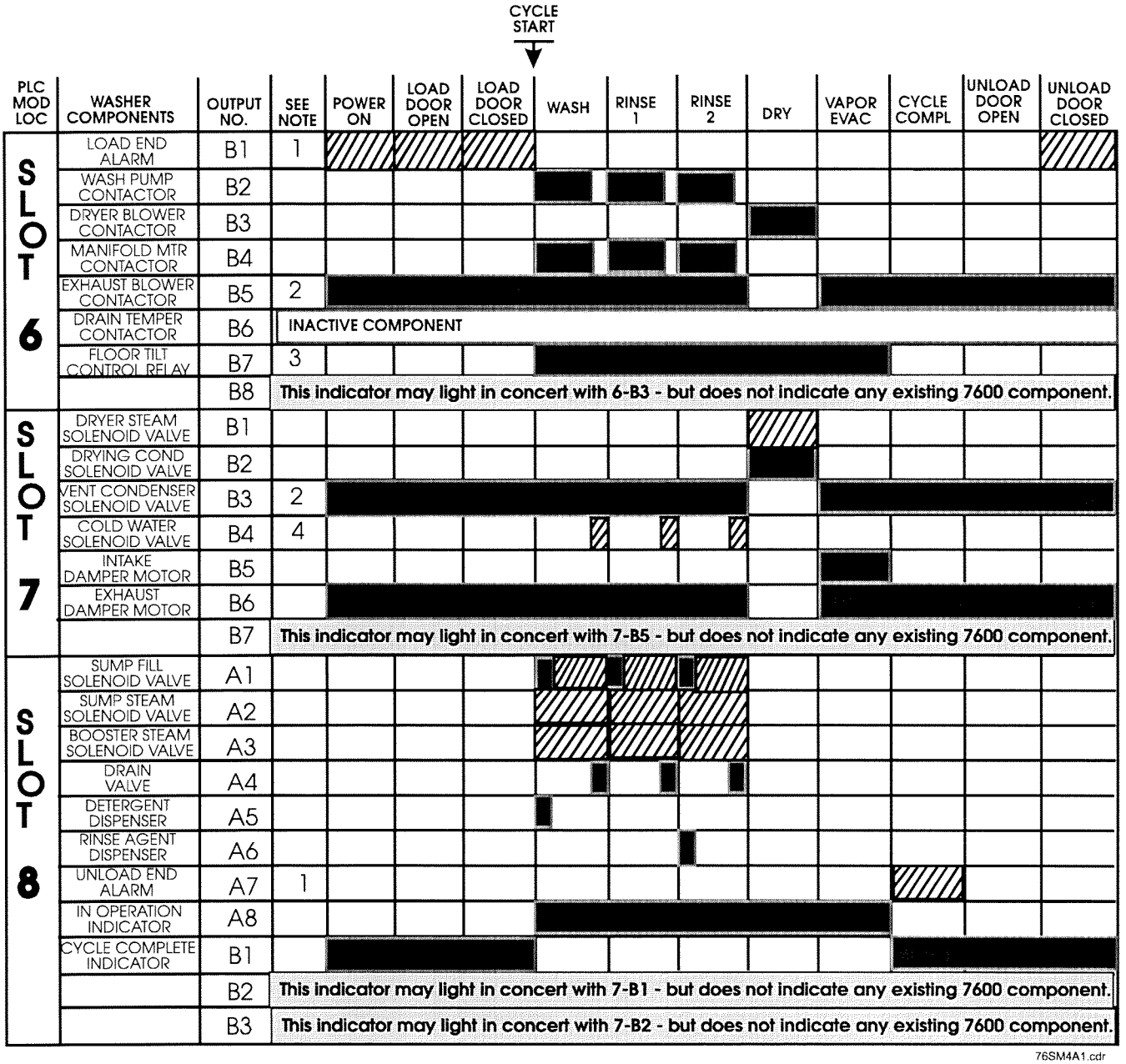
TITLE: MODULE LABELS (SCHEMATIC PAGE 8 OF 12)

PRODUCT	7600 / 7700	SCALE	NTS
DRAWN BY / DATE	CFB 5-20-97	DWG / PART NO	Y970346
APPROVED BY / DATE			

PLUMBING DIAGRAM



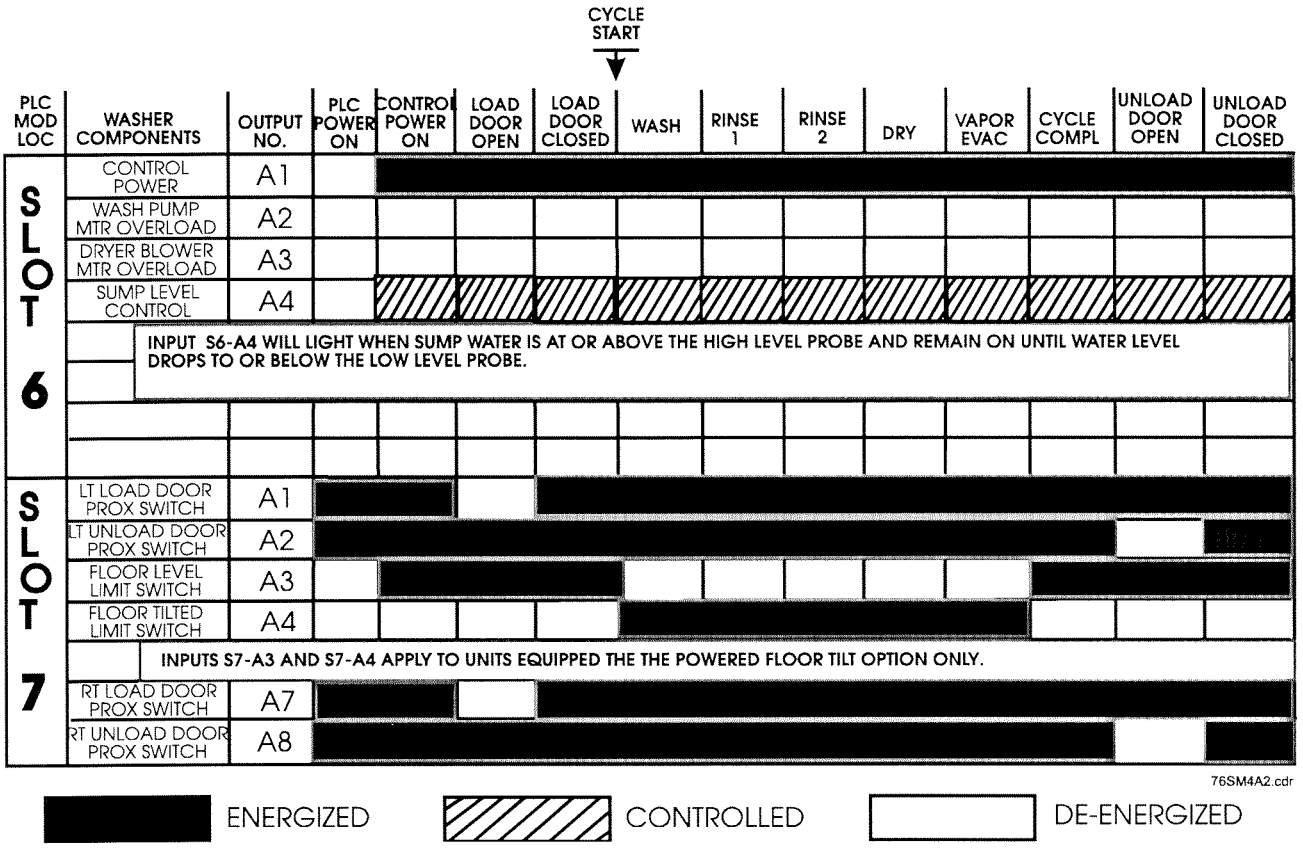
CYCLE PHASE CHART: OUTPUT


CYCLE START
PLC MOD LOC
WASHER COMPONENTS
OUTPUT NO.
SEE NOTE
POWER ON
LOAD DOOR OPEN
LOAD DOOR CLOSED
WASH
RINSE 1
RINSE 2
DRY
VAPOR EVAC
CYCLE COMPL
UNLOAD DOOR OPEN
UNLOAD DOOR CLOSED
SLOT 6
LOAD END ALARM B1 1
WASH PUMP CONTACTOR B2
DRYER BLOWER CONTACTOR B3
MANIFOLD MTR CONTACTOR B4
EXHAUST BLOWER CONTACTOR B5 2
DRAIN TEMPER CONTACTOR B6 INACTIVE COMPONENT
FLOOR TILT CONTROL RELAY B7 3
B8 This indicator may light in concert with 6-B3 - but does not indicate any existing 7600 component.
SLOT 7
DRYER STEAM SOLENOID VALVE B1
DRYING COND SOLENOID VALVE B2
VENT CONDENSER SOLENOID VALVE B3 2
COLD WATER SOLENOID VALVE B4 4
INTAKE DAMPER MOTOR B5
EXHAUST DAMPER MOTOR B6
B7 This indicator may light in concert with 7-B5 - but does not indicate any existing 7600 component.
SLOT 8
SUMP FILL SOLENOID VALVE A1
SUMP STEAM SOLENOID VALVE A2
BOOSTER STEAM SOLENOID VALVE A3
DRAIN VALVE A4
DETERGENT DISPENSER A5
RINSE AGENT DISPENSER A6
UNLOAD END ALARM A7 1
IN OPERATION INDICATOR A8
CYCLE COMPLETE INDICATOR B1
B2 This indicator may light in concert with 7-B1 - but does not indicate any existing 7600 component.
B3 This indicator may light in concert with 7-B2 - but does not indicate any existing 7600 component.
76SM4A1.cdr
ENERGIZED
CONTROLLED
DE-ENERGIZED

NOTES:

1. Two second pulse once every two minutes.
2. Non-vented option only.
3. Powered Floor Tilt option only.
4. Drain tempering supply.

CYCLE PHASE CHART: INPUT


CYCLE START
PLC MOD LOC
WASHER COMPONENTS
OUTPUT NO.
PLC POWER ON
CONTROL POWER ON
LOAD DOOR OPEN
LOAD DOOR CLOSED
WASH
RINSE 1
RINSE 2
DRY
VAPOR EVAC
CYCLE COMPL
UNLOAD DOOR OPEN
UNLOAD DOOR CLOSED
SLOT 6
CONTROL POWER A1
WASH PUMP MTR OVERLOAD A2
DRYER BLOWER MTR OVERLOAD A3
SUMP LEVEL CONTROL A4
INPUT S6-A4 WILL LIGHT WHEN SUMP WATER IS AT OR ABOVE THE HIGH LEVEL PROBE AND REMAIN ON UNTIL WATER LEVEL DROPS TO OR BELOW THE LOW LEVEL PROBE.
SLOT 7
LT LOAD DOOR PROX SWITCH A1
LT UNLOAD DOOR PROX SWITCH A2
FLOOR LEVEL LIMIT SWITCH A3
FLOOR TILTED LIMIT SWITCH A4
INPUTS S7-A3 AND S7-A4 APPLY TO UNITS EQUIPPED THE THE POWERED FLOOR TILT OPTION ONLY.
RT LOAD DOOR PROX SWITCH A7
RT UNLOAD DOOR PROX SWITCH A8
76SM4A2.cdr
ENERGIZED
CONTROLLED
DE-ENERGIZED

THEORY OF OPERATION

PLC POWER SWITCH ON: The PWR, OK, and RUN indicators on the PLC's Power Supply Module light (green). The touch screen displays a door message panel – then the Main Panel. The Main Panel message reads, "Control Power Is OFF." If doors are closed, door inputs S7-A1 & S7-A2 (or S7-A7 & S7-A8) will light.

POWER ON-OFF/RESET SWITCH ON: Control Power input S6-A1 lights. If water level of sump is at high probe, input S6-A4 lights. START push button is displayed on Main Panel. Load end alarm (S6-B1) gives two-second pulse once every 2 minutes. Cycle complete indicator (S8-B1) lights at unload end. Exhaust damper motor (S7-B6) energizes, opening exhaust duct.
If unit has non-vented option: Exhaust blower (S6-B5) energizes. Vent condenser sol valve (S7-B3) is controlled by temperature controller T5 (valve open setpoint: 90°F). Note: T5 value is manually set at the component - not programmed at the PLC.

LOAD DOOR OPEN: Door input indicator S7-A1 (or S7-A7) goes out.

LOAD DOOR CLOSED: Door input indicator S7-A1 (or S7-A7) lights.

CYCLE START
(Start Push Button is pressed.)

WASH PHASE: Load end alarm (S6-B1) stops pulsed signal. Cycle complete indicator (S8-B1) goes out. In operation indicator (S8-A8) lights. *If unit is equipped with optional power floor tilt, floor tilt control relay (S6-B7) energizes, and powered floor is raised. Input S7-A3 goes out. When floor is fully raised, input S7-A4 lights.*

If sump is empty or below low level: Sump fill sol valve (S8-A1) energizes, opening hot water supply line to sump. Booster steam sol valve (S8-A3) energizes, opening the steam supply to booster heater. Detergent dispenser (S8-A5)

is energized for a preset period (eg: 20 seconds) injecting detergent into the sump. When the sump water level reaches the high probe, the wash pump (S6-B2) and the manifold drive motor (S6-B4) are energized, sump fill sol valve (S8-A1) is de-energized. Input S6-A4 lights. Should water level fall below the low probe, input S6-A4 will go out, and sump fill sol valve (S8-A1) will re-energize until water level is restored.
If/when water temp in sump drops to within 3 degrees of setpoint, sump steam sol valve (S8-A2) is energized, opening the steam supply line to the sump heating coil. When temp rises to 8 degrees above setpoint, the sump steam sol valve will de-energize. *(Phase timing stops if temp drops 1-degree below setpoint; resumes when temp is brought back to setpoint.)*
When phase timing is complete, the wash pump (S6-B2), manifold drive motor (S6-B4), and sump steam sol valve (S8-A2) - if energized, will all de-energize. Drain sol valve (S8-A4) will energize for a 2 minute period to gravity drain the sump. Cold water sol valve (S7-B4) will energize, opening cold water supply line to drain line for tempering the sump discharge. After draining period, drain sol valve and cold water sol valve will de-energize.

If sump level is between low & high: Same as above. *(Sump contents result from the retention of cold water supplied to the dryer's condenser during the previous cycle's drying phase.)*

If sump level is at or above high: *(Sump contents result from the retention of cold water supplied to the dryer's condenser during the previous cycle's drying phase.)* Detergent dispenser (S8-A5) is energized for a preset period (20 seconds) injecting detergent into the sump, the wash pump (S6-B2) and the manifold drive motor (S6-B4) are energized, sump steam sol valve (S8-A2) is energized, opening the steam supply line to the sump heating coil. When water temp rises to setpoint, phase timing will begin. When temp rises to 8 degrees above setpoint, the sump steam sol valve will de-energize. Remaining phase description – same as above, where applicable.

RINSE 1 PHASE: Sump fill sol valve (S8-A1) energizes, opening hot water supply line to sump. Booster steam sol valve (S8-A3) energizes, opening the steam supply to booster heater. When the sump water level reaches the high probe, the wash pump (S6-B2) and the manifold drive motor (S6-B4) are energized, sump fill sol valve (S8-A1) is de-energized. Input S6-A4 lights. Should water level fall below the low probe, input S6-A4 will go out, and sump fill sol valve (S8-A1) will re-energize until water level is restored.
Depending on the PLC program for a specific unit, sump steam sol valve (S8-A2) may, or may not, be energized as needed to control sump temperature. In either case, phase timing will continue without interruption.
When phase timing is complete, the wash pump (S6-B2), manifold drive motor (S6-B4), and sump steam sol valve (S8-A2) - if energized, will all de-energize. Drain sol valve (S8-A4) will energize for a 2 minute period to gravity drain the sump. Cold water sol valve (S7-B4) will energize, opening cold water supply line to drain line for tempering the sump discharge. After draining period, drain sol valve and cold water sol valve will de-energize.

RINSE 2 PHASE: Sump fill sol valve (S8-A1) energizes, opening hot water supply line to sump. Booster steam sol valve (S8-A3) energizes, opening the steam supply to booster heater. Rinse agent dispenser (S8-A6) is energized for a preset period (eg: 20 seconds) injecting a rinse agent into the sump. When the sump water level reaches the high probe, the wash pump (S6-B2) and the manifold drive motor (S6-B4) are energized, sump fill sol valve (S8-A1) is de-energized. Input S6-A4 lights. Should water level fall below the low probe, input S6-A4 will go out, and sump fill sol valve (S8-A1) will re-energize until water level is restored.
If/when water temp in sump drops to within 3 degrees of setpoint, sump steam sol valve (S8-A2) is energized, opening the steam supply line to the sump heating coil. When temp rises to 8 degrees above setpoint, the sump steam sol valve will de-energize. *(Phase timing stops if temp drops 1-degree below setpoint; resumes when temp is brought back to setpoint.)*

When phase timing is complete, the wash pump (S6-B2), manifold drive motor (S6-B4), and sump steam sol valve (S8-A2) - if energized, will all de-energize. Drain sol valve (S8-A4) will energize for a 2 minute period to gravity drain the sump. Cold water sol valve (S7-B4) will energize, opening cold water supply line to drain line for tempering the sump discharge. After draining period, drain sol valve and cold water sol valve will de-energize.

DRYING PHASE: Exhaust damper motor (S7-B6) is de-energized, closing exhaust duct. *If unit has non-vented option: Exhaust blower (S6-B5) and vent condenser sol valve (S7-B3) are de-energized.* Dryer blower (S6-B3), drying condenser sol valve (S7-B2), and dryer steam sol valve (S7-B1) are energized. Heated air is circulated through the chamber at high velocity. Cold water passing through the condenser is directed to the sump.
If/when air temp in dryer duct (sensed by T2) drops to within 3 degrees of setpoint, dryer steam sol valve (S7-B1) is energized, opening the steam supply line to the dryer's heating coil. When temp rises to 8 degrees above setpoint, the dryer steam sol valve will de-energize
When phase timing is complete, Dryer blower (S6-B3), drying condenser sol valve (S7-B2), and dryer steam sol valve (S7-B1) are de-energized.

VAPOR EVACUATION PHASE: Exhaust damper motor (S7-B6) and intake damper motor (S7-B5) are energized, opening exhaust duct. *If unit has non-vented option: Exhaust blower (S6-B5) energizes. Vent condenser sol valve (S7-B3) is controlled by temperature controller T5 (valve open setpoint: 90°F). Note: T5 value is manually set at the component- not programmed at the PLC.*
Outside air is drawn through the chamber to remove moisture-laden hot air for a preset period of time (eg: 60 seconds).
When phase timing is complete, intake damper motor (S7-B5) is energized.

CYCLE COMPLETE: In operation indicator (S8-A8) goes out at the unload end. Cycle complete indicator (S8-B1) lights. Unload end alarm (S8-A7) gives two-second pulse once every 2 minutes.

UNLOAD DOOR OPEN: Door input indicator S7-A2 (or S7-A8) goes out. Unload end alarm (S8-A7) stops two-second pulse.

UNLOAD DOOR CLOSED: Door input indicator S7-A2 (or S7-A8) lights. Load end alarm (S6-B1) gives two-second pulse once every 2 minutes.

NOTES:

FACTORY-SET CYCLES

The following cycle setup values have been preprogrammed at the factory. These may be retained and used, or changed as desired to meet specific needs.

Both the Detergent and Rinse Aid dispensers are ON for all settings listed. A dosage amount of 0.25 oz/gal is recommended (set by service personnel).

The recommended Vapor Evacuation (Exhaust) phase setting for each cycle is 60 seconds (set at the Supervisor Sub-Panel).

FACTORY-SET CYCLES

CYCLE #	WASH			RINSE 1			RINSE 2			DRYING	
	TIME (sec)	TEMP °F	FILL °F	TIME (sec)	TEMP °F	FILL °F	TIME (sec)	TEMP °F	FILL °F	TIME (sec)	TEMP °F
1	120	140	N/A	30	N/A	N/A	120	150	150	900	240
2	120	140	N/A	30	N/A	N/A	120	150	150	900	240
3	120	140	N/A	30	N/A	N/A	120	150	150	900	240
4	10	40	N/A	10	N/A	N/A	10	40	40	10	40

NOTES:

TOUCH SCREEN INTERFACE

GENERAL

The Control Panel on this Washer provides the operator with a touch screen interface linked to the Programmable Logic Controller (PLC) located in the Control Box. Using this panel, the operator is able to:

- Select a processing cycle.
- Program cycle phase timing.
- Program cycle phase temperature.
- Turn dispensers on or off
- Start a processing cycle.
- Monitor the status of an ongoing cycle.
- Manually drain the washer's sump.

In addition to the above, supervisory personnel are able to:

- Access load counters and time display.
- Protect cycle progamming.
- Program exhaust timing
- Set date and time.

The PLC Power Switch (located in the control box) must be in the ON position to activate the Control Panel. When activated, a green indicator in the lower left corner of the Panel's frame will light, and the screen will display the MAIN Panel. However, though activated, the touch screen will be inoperative, and a "CONTROL POWER IS OFF" message will be displayed.

Turning the washer's CONTROL POWER ON-OFF/RESET Switch to the ON position will make the Control Panel operative. When operative, the START Push Button will replace the "CONTROL POWER IS OFF" message.

NOTE: If the Control Panel's touch screen remains idle and untouched for a 1-hour period it will automatically go dark. This is its "screen-saver" feature. Touching the screen anywhere, just once, will re-illuminate it.

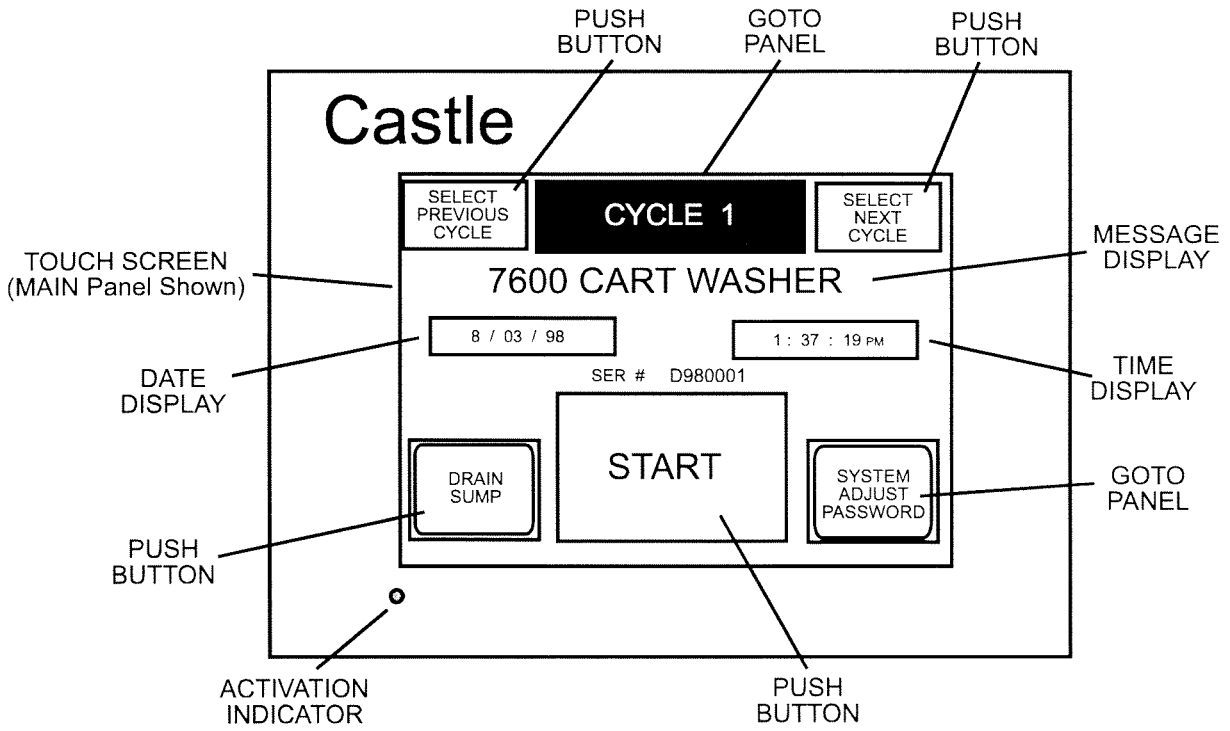


FIGURE 6-1: MAIN CONTROL PANEL

OPERATOR

As shown in Figure 6-1, the touch screen for the MAIN Control Panel consists of four Push Buttons, two GoTo Panels, and three Displays.

START Push Button

Starts (when pressed) a routine processing cycle.

CYCLE Selection GoTo Panel

- Displays the currently selected cycle.
- Accesses (when pressed) a Cycle Setup sub-panel that enables the operator to check/change cycle phase times, phase temperatures, and hot water fill temperatures setpoints for the selected cycle. It also enables turning the liquid supply dispensers on or off.

  NOTE: Supervisory personnel have the option to protect cycles. If a cycle is protected, changes to selectable program values cannot be made using the Cycle Setup sub-panel.

SELECT NEXT CYCLE Push Button

Changes (when pressed) the cycle selection incrementally.

SELECT PREVIOUS CYCLE Push Button

Changes (when pressed) the cycle selection decrementally.

DRAIN SUMP Push Button

Manually drains (when pressed) the washer's sump.

SYSTEM ADJUST PASSWORD GoTo Panel

Displays (when pressed) a data entry keypad. Entering a correct numerical password will access the Supervisor sub-panel. Utilization of this panel is restricted to supervisory personnel.

Message Display

Identifies the washer by model and serial number.

Date and Time Displays

Display the date and the time. Settings are made by supervisory personnel through the Supervisor sub-panel.

Using The CYCLE Setup GoTo Panel:

Pressing the CYCLE Selection GoTo Panel at the MAIN Control Panel will display the Cycle Setup sub-panel for a selected cycle. This sub-panel provides the operator with four Push Buttons, one GoTo Panel, up to eleven Data Keys, and a Message Display.

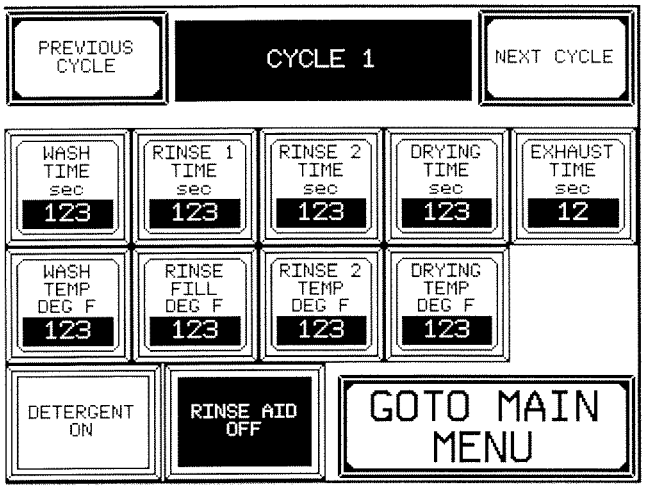


FIGURE 6-2: CYCLE SETUP SUB-PANEL

WASH TIME sec Data Key

Displays the current timing value (in seconds) of the Wash phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

WASH TEMP F Data Key

Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the detergent water held in the washer's sump during the Wash phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 1 TIME sec Data Key

Displays the current timing value (in seconds) of the Rinse 1 phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE FILL DEG F Data Key

Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the rinse water held in the washer's sump during the Rinse 1 phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 2 TIME sec Data Key

Displays the current timing value (in seconds) of the Rinse 2 phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 2 TEMP F Data Key

Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the rinse water held in the washer's sump during the Rinse 2 phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DRYING TIME sec Data Key

Displays the current timing value (in seconds) of the Drying phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DRYING TEMP F Data Key

Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the forced hot air recirculated through the washer's compartment during the Drying phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

EXHAUST TIME sec Data Key

Displays the current timing value (in seconds) of the Exhaust phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DETERGENT Push Button

Turns on or off (when pressed) the Detergent Dispenser for a selected cycle.

RINSE AID Push Button

Turns on or off (when pressed) the Rinse Aid Dispenser for a selected cycle.

PREVIOUS CYCLE and NEXT CYCLE Push Buttons

Changes (when pressed) the cycle selection. The PREVIOUS CYCLE Push Button changes cycle selection in a #4 to #1 direction. The NEXT CYCLE Push Button changes cycle selection in a #1 to #4 direction. When a cycle change is made, the sub-panel for the new cycle will be displayed. NOTE: A cycle selection made at this sub-panel will be in effect when the MAIN panel is returned to the screen.

MESSAGE (Cycle) DISPLAY

Identifies the selected cycle for which the sub-panel and its displayed values apply.

GOTO MAIN MENU GoTo Panel

Exits (when pressed) the sub-panel and returns the MAIN Control Panel to the screen.

Using A Data Entry Keypad:

Shown here is a typical Data Entry Keypad that will be displayed when a Data Key is pressed. This particular one is used for programming the WASH TIME setpoint. It will show the "current value" of the setpoint, the "minimum" value that can be entered (60 seconds), and the "maximum" value that can be entered (900 seconds).

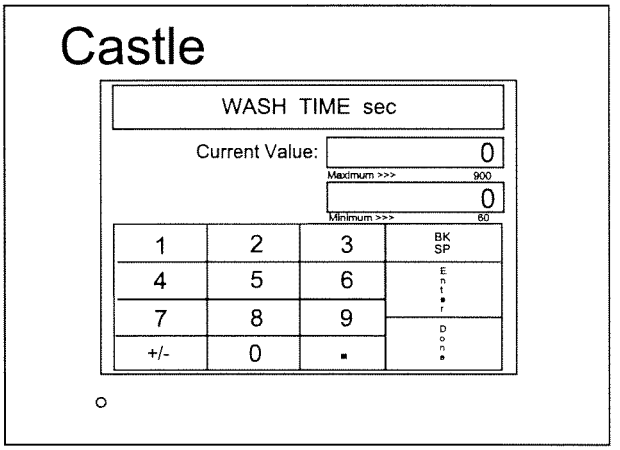


FIGURE 6-3: DATA ENTRY KEYPAD

To operate the Keypad:

1. Press the correct numerical keys for the desired value.
   - The value that was entered will be displayed.
2. If the value is correct, press the ENTER Key.
   - The new value will appear in the CURRENT VALUE block.
3. To exit the Data Entry Keypad, press the DONE Key.
   - The Cycle Review And Program sub-panel will again be displayed.

NOTE: The Keypad will only accept values that fall within the range specified by the "minimum" and "maximum" limits.

Cycle Protection:

Supervisory personnel are provided with the means to protect the selectable values of one or more cycles from change. When a cycle is protected, its Cycle Setup sub-panel will appear as shown in Figure 6-4. Operator access to all Data Entry Keypads is prohibited; the DETERGENT and RINSE AID Push Buttons are inoperative.

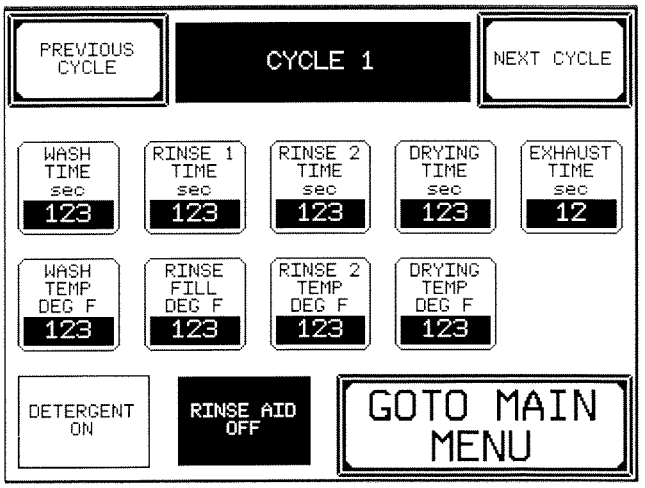


FIGURE 6-4: CYCLE SETUP (PROTECTED) SUB-PANEL

Processing Cycle Screen Description:

The following is a description of the cycle phase screen that will appear on the Control Panel during the course of a routine processing cycle.

Message Display

Identifies the selected cycle (by number), and gives the current status of that cycle. For example, in Figure 6-5, the selected cycle is number 1, and it is currently in its "WASHING" (WASH) phase.

TIME sec Display

Displays the actual timing count for the cycle phase that is identified in the Message Display. All timing displays will progress downward from the setpoint to 0 (During timing, every second may not be displayed due to congested data communications traffic.)

TIME SETPOINT Display

Displays the current timing setpoint that was programmed for the cycle phase identified in the Message Display.

TEMP F Display

Displays the actual temperature (in degrees F) for the following:

- Sump contents during Wash, Rinse 1, and Rinse 2 phases.
- Water fill temperature.
- Dry phase temperature.
- Exhaust phase temperature.

TEMP SETPOINT Display

Displays the current temperature setpoint (in degrees F) that was programmed for the phase.

EXTEND Push Button

Extends (when pressed) the ongoing timing of a cycle phase by a preset number of seconds. See: To Extend Phase Timing During Cycle in the Operators Manual.

STOP Push Button

Stops (when pressed) washer operation. The MAIN Control Panel will be displayed. See: Emergency Stop in the Operators Manual.

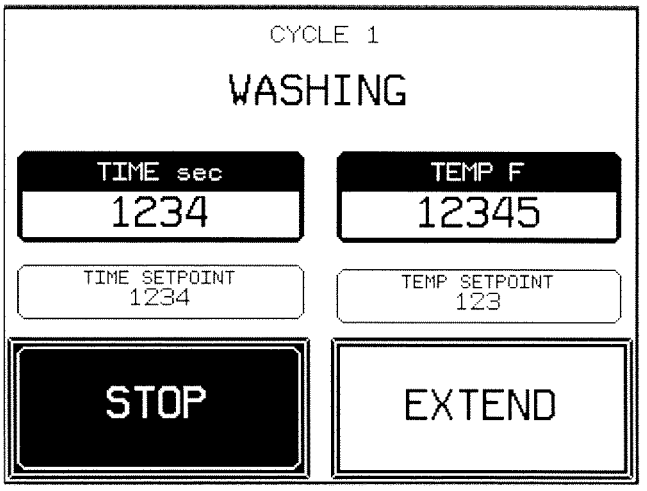


FIGURE 6-5: PROCESSING CYCLE SCREEN

NOTES:

SUPERVISOR

The Supervisor sub-panel enables the user to:

- Protect one or more cycles.
- Program Exhaust phase timing.
- Check a non-resetable load counter.
- Check/reset a resetable load counter.
- Change supervisor password.
- Set time and date

Access to the Supervisor sub-panel requires the keypad entry of a numerical password. The factory setting for this password is "2468". After washer installation, this password may be changed by the user to ensure limited access to the sub-panel.

To Change The Factory-Set Password:

1. Press the PASSWORD GoTo Panel on the MAIN Control Panel.
   - A Password Entry Keypad will appear.

2. Enter the factory-set password (2468) at the Keypad. Then press the ENTER Key. (Pressing DONE is not required.)
   - The Supervisor sub-panel will be displayed.

3. Press the CHANGE SUPERVISOR PASSWORD Key.
   - A CHANGE SUPERVISOR Password Entry Keypad will be displayed.

4. Enter the new numeric password on the Keypad. The program will accept any number from 1 to 30000.
   - The new number will appear above the Keypad.

5. Check the number to be sure it is correct. Use the Keypad to change it if it is not correct.

6. If number is correct, press the ENTER Key.
   - The new number will appear in the CURRENT VALUE space.

7. Press the DONE Key.
   - The new password is now in effect.
   - The Supervisor sub-panel will reappear.
   - The new password will be displayed on the CHANGE SUPERVISOR PASSWORD Key.

When ready, press GOTO MAIN MENU to exit the sub-panel.

NOTE: The PASSWORD GoTo Panel is also used to access restricted service and factory sub-panels. Service password: 1357. Factory password: 23512.

Using The Supervisor Sub-Panel:

The Supervisor sub-panel provides the user with four Push Buttons, two GoTo Panels, three Keys, and two Load Counters. (Follow steps 1 & 2 above to access this sub-panel.)

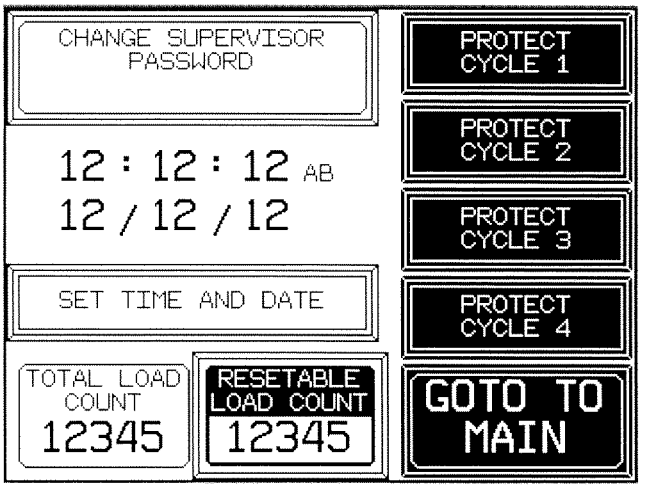


FIGURE 6-6: SUPERVISOR SUB-PANEL

PROTECT CYCLE Push Button

Protects (when pressed) the selectable values that were programmed for the cycle identified above the button.

CHANGE SUPERVISOR PASSWORD Key

Displays the current numerical password that is required for accessing the Supervisor sub-panel. Pressing this Key will display a Password Entry Keypad that is used for changing the password.

SET TIME AND DATE GoTo Panel

Displays (when pressed) a Set Time And Date sub-panel that enables the supervisor to change the time or the date that appears on the MAIN panel and (if equipped) a recorder print-out. (Current time and date will be displayed directly below the GoTo Panel.)

TOTAL LOAD COUNT Load Counter

Displays the total number of loads (cycles) that have been run on the unit since it was put into operation. This counter is not resetable.

RESETABLE LOAD COUNT Load Counter

Displays the total number of loads (cycles) that have been run on the unit since the Button itself was last pushed. Pushing the Button resets the counter to "0".

GOTO MAIN GoTo Panel

Exits (when pressed) the sub-panel and returns to the MAIN Control Panel.

Using the SET TIME AND DATE Sub-Panel

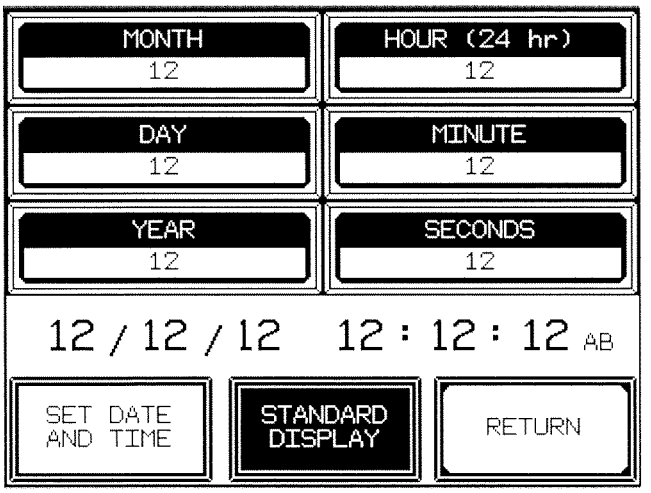


FIGURE 6-7: SET TIME AND DATE Sub-Panel

Pressing the SET TIME AND DATE GoTo Panel at the Supervisor sub-panel will display a Set Time And Date sub-panel. This sub-panel provides the supervisor with three date Data Keys, two time Data Keys, and two Push Buttons. It also displays the current date and time setting.

Use the MONTH, DAY, and/or YEAR Data Keys to change the date. The current value for each will be displayed on the face of the Key. To change a-value, press the Data Key for access to its Data Entry Keypad.

Use the HOUR (24 hr), MINUTE, andSECONDS Data Keys to change the time. The current value (based on a twenty-four hour timing clock) for each will be displayed on the face of the Key. To change a value, press the data Key for access to its Data Entry Keypad.

SET DATE AND TIME Push Button

Saves (when pressed) any changes made to the date and/or time. Changes will not be effective unless this Button is pressed.

STANDARD DISPLAY Push Button

Changes (when pressed) the time display from a 12-hour standard display to a 24-hour military display.

RETURN TO SUPERVISOR Push Button

Exits (when pressed) the sub-panel and returns to the Supervisor sub-panel.

SERVICE

The Service sub-panel enables the user to:

- View/change selected cycle's programmed values.
- View/change service timer values.
- View/change alarm timer values.
- View Input/Output status.
- Enable/disable temperature guarantee.
- Bypass thermocouple faults.
- Change service password.

Access to the Service sub-panel requires the keypad entry of a numerical password. The factory setting for this password is "1357".

To Access The Service Sub-Panel From The Main Panel:

1. Press the SYSTEM ADJUST PASSWORD GoTo Panel on the MAIN Control Panel.
   - A Password Entry Keypad will appear.

2. Enter the factory-set password (1357) at the Keypad. Then press the ENTER Key. (Pressing DONE is not required.)
   - The Service sub-panel will be displayed.

To Access The Service Sub-Panel From The Processing Cycle Screen (during a cycle):

1. Press the blank upper corner (right or left) of the processing cycle screen.
   - A Password Entry Keypad will appear.

2. Enter the factory-set password (1357) at the Keypad. Then press the ENTER Key. (Pressing DONE is not required.)
   - The Service sub-panel will be displayed.

To Change The Factory-Set Password:

1. Press the SYSTEM ADJUST PASSWORD GoTo Panel on the MAIN Control Panel.
   - A Password Entry Keypad will appear.

2. Enter the factory-set password (1357) at the Keypad. Then press the ENTER Key. (Pressing DONE is not required.)
   - The Service sub-panel will be displayed.

3. Press the SET SERVICE PASSWORD Key.
   - A Password Entry Keypad will be displayed.

4. Enter the new numeric password on the Keypad. The program will accept any number from 1 to 30000.
   - The new number will appear above the Keypad.

5. Check the number to be sure it is correct. Use the Keypad to change it if it is not correct.

6. If number is correct, press the ENTER Key.
   - The new number will appear in the CURRENT VALUE space.

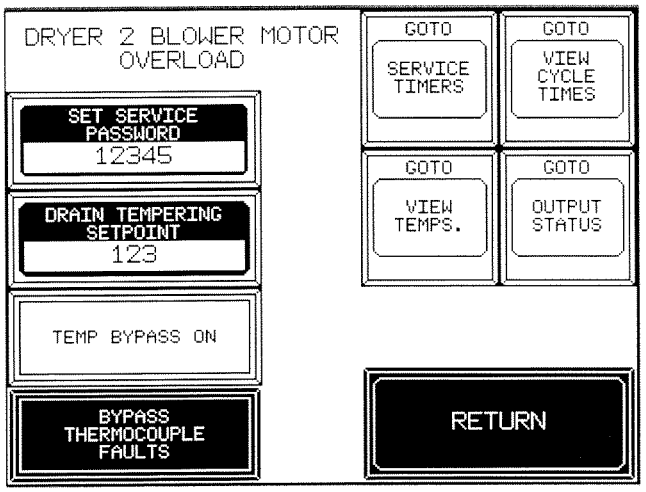
7. Press the DONE Key.
   - The new password is now in effect.
   - The Service sub-panel will reappear.
   - The new password will be displayed on the SET SERVICE PASSWORD Key.

When ready, press GOTO MAIN MENU to exit the sub-panel.

NOTE: The PASSWORD GoTo Panel is also used to access restricted supervisor and factory sub-panels. Supervisor password: 2468. Factory password: 23512.

Service Sub-Panel:

The Service sub-panel provides the user with two Push Buttons, five GoTo Panels, and two Data Keys.



VIEW CYCLE TIMES GoTo Panel

Displays (when pressed) the Cycle Setup sub-panel for the selected cycle. This is the same sub-panel used by the operator to view or change the programmed values for a selected cycle. See also, page 6-2.

VIEW TEMPS GoTo Panel

Displays (when pressed) the View Temperatures sub-panel. This sub-panel displays the setpoint and actual temperature values for sump contents, dryer duct air, and booster heated hot water – as sensed by thermocouples T1, T2, and T4.

SERVICE TIMERS GoTo Panel

Displays (when pressed) the Service Timers sub-panel. Allows the user to view/change service timer values.

OUTPUT STATUS GoTo Panel

Displays (when pressed) the Slot 6-8 I/O Status sub-panel. Allows the user to view input/output status of the components controlled by the PLC module. (Function is similar to the green A & B numerical indicators on the module.)

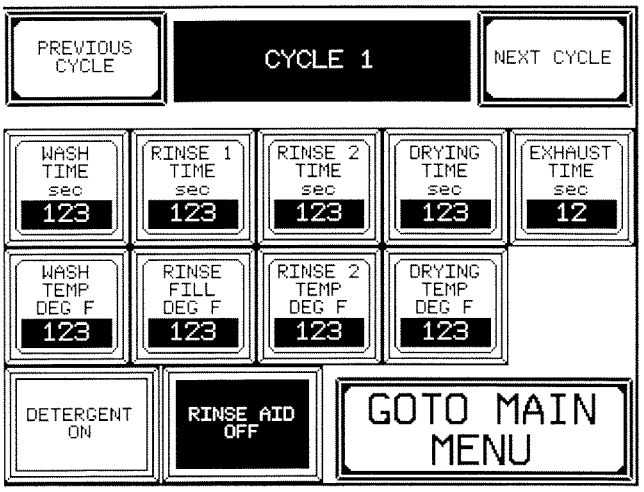
BYPASS THERMOCOUPLE FAULTS Push Button

Selects (when pressed) the option to bypass thermocouple fault protection for all cycles.

TEMP BYPASS Push Button

Enables/disables (when pressed) the temperature guarantee feature for the selected cycle.

VIEW CYCLE TIMES Sub-Panel
(Same as the Cycle Setup sub-panel accessed at the Main Panel.)



WASH TIME (sec) Data Key
Displays the current timing value (in seconds) of the Wash phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 1 sec Data Key
Displays the current timing value (in seconds) of the Rinse 1 phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 2 sec Data Key
Displays the current timing value (in seconds) of the Rinse 2 phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DRYING sec Data Key
Displays the current timing value (in seconds) of the Drying phase's programmed setpoint. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

EXHAUST TIME (sec) Data Key
Displays the current value (in seconds) of the fresh air exhaust that occurs after the Drying Phase is complete. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

WASH TEMP F Data Key
Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the detergent water held in the washer's sump during the Wash phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE FILL F Data Key
Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the hot water booster heater used to fill the sump for Rinse 1 & 2 phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

RINSE 2 TEMP F Data Key
Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the rinse water held in the washer's sump during the Rinse 2 phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DRYING TEMP F Data Key
Displays the current value (in degrees Fahrenheit) of the programmed temperature setpoint for the forced hot air recirculated through the washer's compartment during the Drying phase. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DETERGENT Push Button
Turns on or off (when pressed) the Detergent Dispenser for a selected cycle.

RINSE AID Push Button
Turns on or off (when pressed) the Rinse Aid Dispenser for a selected cycle.

PREVIOUS CYCLE and NEXT CYCLE Push Buttons

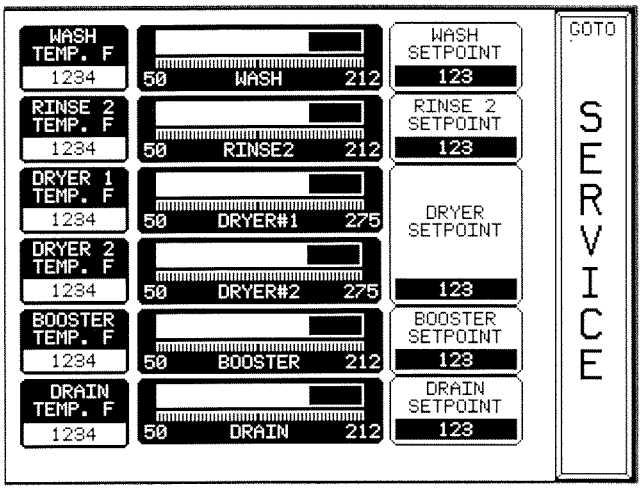
Changes (when pressed) the cycle selection. The PREVIOUS CYCLE Push Button changes cycle selection in a #4 to #1 direction. The NEXT CYCLE Push Button changes cycle selection in a #1 to #4 direction. When a cycle change is made, the sub-panel for the new cycle will be displayed. NOTE: A cycle selection made at this sub-panel will be in effect when the MAIN panel is returned to the screen.

GOTO MAIN MENU GoTo Panel

Exits (when pressed) the sub-panel and returns the MAIN Control Panel to the screen.

VIEW TEMPS Sub-Panel

The View Temps sub-panel provides the user with three temperature displays, three temperature setpoint displays, and one GoTo Panel.



WASH/RINSE 2 Temperature Display
: Displays the actual temperature of the contents of the sump as sensed by thermocouple T1.

WASH/RINSE 2 Temperature Setpoint Display
: Displays the current phase temperature setpoint (in degrees F) that was programmed for the selected cycle at the Cycle Setup sub-panel (Wash, Rinse 1, & Rinse 2 Temp.).

DRYER 1 Temperature Display
: Displays the actual temperature of the air in the dryer duct as sensed by thermocouple T2.

DRYER 1 F Temperature Setpoint Display
: Displays the current drying phase temperature setpoint (in degrees F) that was programmed for the selected cycle at the Cycle Setup sub-panel (Drying Temp.).

DRYER 2 Temperature Display (7700 ONLY)
: Displays the actual temperature of the air in the dryer duct as sensed by thermocouple T4.

DRYER 2 F Temperature Setpoint Display
: Displays the current drying phase temperature setpoint (in degrees F) that was programmed for the selected cycle at the Cycle Setup sub-panel (Drying Temp.).

BOOSTER Temperature Display
: Displays the actual temperature of the hot water discharge of the booster heater as sensed by thermocouple T4.

BOOSTER F Temperature Setpoint Display
: Displays the current hot water temperature setpoint (in degrees F) that was programmed for the booster heater at the Cycle Setup sub-panel (Wash, Rinse 1, & Rinse 2 Fill.).

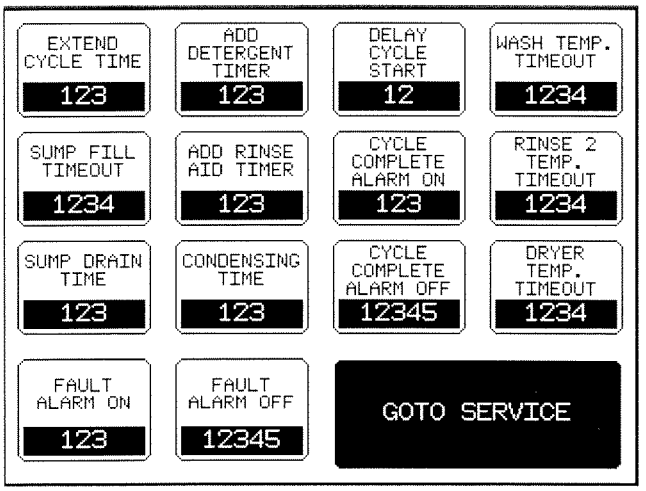
DRAIN TEMP F Temperature Display (OPTIONAL)
: Displays the actual temperature of the drain water as sensed by thermocouple T5 for drain tempering.

DRAIN TEMP F Temperature Setpoint Display
: Displays the current drain tempering temperature setpoint (in degrees F) that was programmed in the SERVICE SUB-PANEL.

SERVICE GoTo Panel
: Exits (when pressed) the View Temps sub-panel and returns to the Service sub-panel.

SERVICE TIMERS Sub-Panel

The Service Timers sub-panel provides the user with fourteen Data Keys and one GoTo Panel.



EXTEND CYCLE TIME Data Key

Displays the current timing value programmed for the time period increase that occurs each time the Extend push button is pressed during a cycle (eg: 10 seconds). Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

ADD DETERGENT TIMER Data Key

Displays the current timing value that the Detergent Dispenser S8-A5 will remain energized to pump detergent into the sump (eg: 20 seconds). Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

DELAY CYCLE START Data Key

Displays the current delay timing value for energizing the circulation pump S6-B2 after the START push button is pressed for the purpose of allowing chamber atmosphere to normalize (eg: 10 seconds). Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

WASH TEMP TIMEOUT Data Key

Displays the current timing value that Sump Steam solenoid S8-A2 will remain energized during the Wash phase (eg: 600 seconds). If sump setpoint temperature is not reached before timeout, a fault will occur. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

SUMP FILL TIMEOUT Data Key

Displays the current timing value that Sump Fill solenoid S8-A1 will remain energized (eg: 280 seconds). If high level probe in sump is not reached before timeout, a fault will occur. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

ADD RINSE AID TIMER Data Key

Displays the current timing value that the Rinse Aid Dispenser S8-A6 will remain energized to pump rinse agent into the sump (eg: 20 seconds). Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

CYCLE COMPLETE ALARM ON Data Key

Displays the current timing value programmed for the period of time the cycle complete alarm will sound for one continuous pulse. Pressing this Data Key will display a Entry Keypad that is used for programming the value.

RINSE 2 TEMP TIMEOUT Data Key

Displays the current timing value that Sump Steam solenoid S8-A2 will remain energized during the Rinse 2 phase (eg: 600 seconds). If sump setpoint temperature is not reached before timeout, a fault will occur. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

SUMP DRAIN TIME Data Key

Displays the current timing value that the motorized drain solenoid S8-A4 will remain energized to drain the sump (eg: 180 seconds). Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

CONDENSING TIME Data Key

Displays the current timing value for energizing the cold water condensing solenoid S7-B3 during the drying phase. ***This Data Key applies to non-vented units only***. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

CYCLE COMPLETE ALARM OFF Data Key

Displays the current timing value programmed for the period of time between intermittent pulses of the cycle complete alarm. Pressing this Data Key will display a Data Entry Keypad that is used for programming the value.

DRYER TEMP TIMEOUT Data Key

Displays the current timing value that Dryer Steam solenoid S7-B1 will remain energized during the Drying phase (eg: 600 seconds). If drying setpoint temperature is not reached before timeout, a fault will occur. Pressing this Data Key will display a Data Entry Keypad that is used for programming the setpoint.

FAULT ALARM ON Data Key

Displays the current timing value programmed for the period of time the fault alarm will sound for one continuous pulse. Pressing this Data Key will display a Data Entry Keypad that is used for programming the value.

FAULT ALARM OFF Data Key

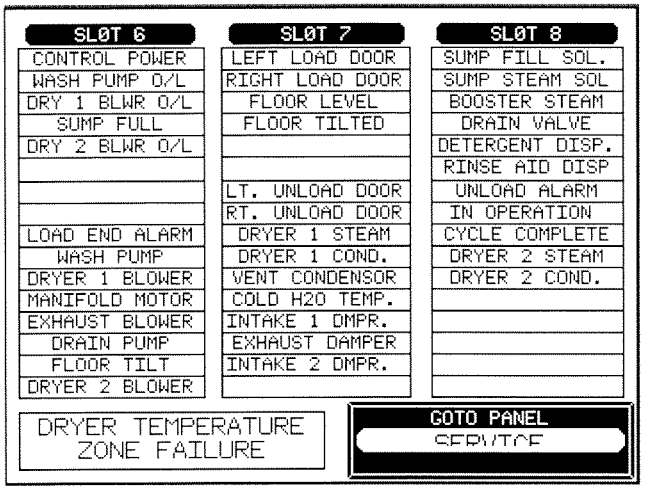
Displays the current timing value programmed for the period of time between intermittent pulses of the fault alarm. Pressing this Data Key will display a Data Entry Keypad that is used for programming the value.

SERVICE GoTo Panel

Exits (when pressed) the Service Timers sub-panel and returns to the Service sub-panel.

I/O STATUS Sub-Panel

The I/O Status sub-panel provides the user with thirtyseven indicators, and one GoTo Panel.



CONTROL POWER Indicator
Indicates Control Power is on if showing black letters on white background. Off – if showing white letters on black background. Indicator is same as on the PLC at S6-A1.

WASH PUMP MOTOR OVERLOAD Indicator
Indicates overload condition if showing black letters on white background. No overload – if showing white letters on black background. Indicator is same as on the PLC at S6-A2.

DRYER BLOWER#1 MOTOR OVERLOAD Indicator
Indicates overload condition if showing black letters on white background. No overload – if showing white letters on black background. Indicator is same as on the PLC at S6-A3.

SUMP LEVEL FILL Indicator
Indicates high probe fill condition made if showing black letters on white background. Below low probe condition – if showing white letters on black background. Indicator is same as on the PLC at S6-A4.

DRYER BLOWER#2 MOTOR OVERLOAD Indicator
Not applicable to a 7600 Series Washer.

LOAD END ALARM Indicator
Indicates load end alarm is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S6-B1.

WASH PUMP MOTOR CONTACTOR Indicator
Indicates contactor is made (pump is energized) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S6-B2.

DRYER BLOWER #1 CONTACTOR Indicator
Indicates contactor is made (blower motor is energized) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S6-B3.

MANIFOLD MOTOR CONTACTOR Indicator
Indicates contactor is made (manifold drive motor is energized) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S6-B4.

EXHAUST BLOWER CONTACTOR Indicator
Indicates contactor is made (blower motor is energized) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S6-B5.

DRAIN PUMP CONTACTOR Indicator
Indicates contactor is made (drain tempering pump is energized) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S6-B6. (Note: Not an active component.)

FLOOR TILT CONTACTOR Indicator
Indicates relay is energized (floor is raised) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S6-B7.

DRYER BLOWER #2 CONTACTOR Indicator
Not available on 7600 Series washers.

LEFT HAND LOAD DOOR Indicator
Indicates load door switch is made (door closed) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S7-A1. (Applies to left hand units only.)

RIGHT HAND LOAD DOOR Indicator
Indicates load door switch is made (door closed) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S7-A2. (Applies to right hand units only.)

FLOOR LEVEL Indicator
Indicates actuator's extend limit switch is made (floor level) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S7-A3. (Applies to units with optional power floor tilt only.)

FLOOR TILT Indicator
Indicates actuator's retract limit switch is made (floor raised) if showing black letters on white background. Not made - if showing white letters on black background. Indicator is same as on the PLC at S7-A4. (Applies to units with optional power floor tilt only.)

LEFT HAND UNLOAD DOOR Indicator
Indicates unload door switch is made (door closed) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S7-A7. (Applies to left hand units only.)

RIGHT HAND UNLOAD DOOR Indicator
Indicates unload door switch is made (door closed) if showing black letters on white background. Not made – if showing white letters on black background. Indicator is same as on the PLC at S7-A8. (Applies to right hand units only.)

DRYER #1 STEAM Indicator
Indicates dryer steam solenoid valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B1.

DRYER #1 CONDENSER Indicator
Indicates dryer condenser solenoid valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B2.

VENT CONDENSER Indicator
Indicates vent condenser solenoid valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B3. (Applies to non-vented units only.)

COLD WATER SOLENOID VALVE Indicator
Indicates drain tempering cold water solenoid valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B4.

INTAKE #1 DAMPER Indicator
Indicates intake damper motor is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B5.

EXHAUST #1 DAMPER Indicator
Indicates exhaust damper motor is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S7-B6. (Applies to non-vented units only.)

INTAKE #2 DAMPER Indicator
Does not apply to 7600 Series washers.

SUMP FILL SOLENOID Indicator
Indicates booster heated hot water solenoid valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A1.

SUMP STEAM SOLENOID Indicator
Indicates steam supply solenoid valve to sump heating coil is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A2.

BOOSTER STEAM SOLENOID Indicator
Indicates steam supply solenoid valve to booster heater is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A3.

DRAIN VALVE Indicator
Indicates motorized drain valve is energized (open) if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A4.

DETERGENT DISPENSER Indicator
Indicates detergent dispenser is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A5.

RINSE AGENT DISPENSER Indicator
Indicates rinse agent (aid) dispenser is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A6.

UNLOAD ALARM Indicator
Indicates the Unload Alarm on the unload end panel is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A7.

IN OPERATION Indicator
Indicates the In Operation indicator on the unload end panel is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-A8.

CYCLE COMPLETE Indicator
Indicates the Cycle Complete indicator on the unload end panel is energized if showing black letters on white background. De-energized – if showing white letters on black background. Indicator is same as on the PLC at S8-B1.

DRYER #2 STEAM SOLENOID Indicator
Does not apply to 7600 Series washers.

DRYER #2 CONDENSER SOLENOID Indicator
Does not apply to 7600 Series washers.

CYCLE STATUS Indicator
Displays real time cycle phase status of the washer.

RETURN TO SERVICE GoTo Panel
Exits (when pressed) the I/O Status sub-panel and returns to the Service sub-panel.

NOTES:

FACTORY

The Factory sub-panel enables the user to:

- View/change the washer's serial number.
- Configure the PLC's default values.
  - Washer model (Select)
  - Pass-Thru (Select)
  - Powered Floor Tilt (Select Option).
  - Drain Tempering (Select).
  - Booster Heater (Select).
  - Printer (Select Option).

Access to the Factory sub-panel requires the keypad entry of a numerical password. The factory setting for this password is "23512".

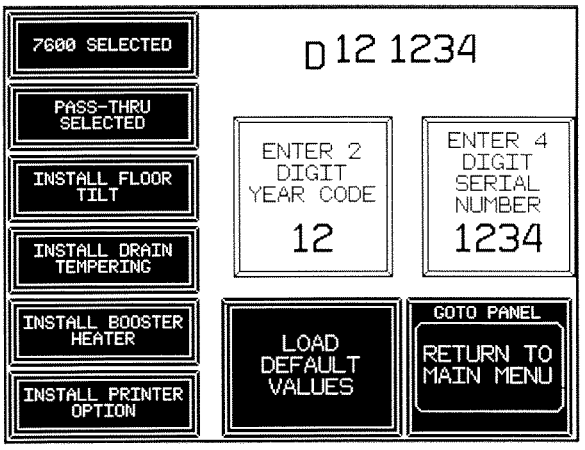
To Access The Factory Sub-Panel From The Main Panel:

1. Press the SYSTEM ADJUST PASSWORD GoTo Panel on the MAIN Control Panel.
   - A Password Entry Keypad will appear.

2. Enter the factory-set password (23512) at the Keypad. Then press the ENTER Key. (Pressing DONE is not required.)
   - The Factory sub-panel will be displayed.

Factory Sub-Panel

The Factory sub-panel provides the user with six selections, one push button, one GoTo Panel, and two Data Keys.



MODEL SELECTED Selector
: Selects Model 7600 or Model 7700 washer configuration.

PASS THRU Selector
: Selects either a pass-thru (double door) or single door for the washer configuration.

INSTALL FLOOR TILT Selector
: Selects the optional powered floor tilt for the washer configuration.

INSTALL DRAIN TEMPERING Selector
: Selects the drain tempering for the washer configuration.

INSTALL BOOSTER HEATER Selector
: Selects the booster heater for the washer configuration.

INSTALL PRINTER Selector
: Selects the optional printer for the washer configuration.

ENTER YEAR CODE Data Key
: Pressing this Data Key will display a Data Entry Keypad used for entering the first two numerical digits contained in the washer's alpha-numeric serial number.

ENTER SERIAL NUMBER Data Key
: Pressing this Data Key will display a Data Entry Keypad used for entering the last four numerical digits contained in the washer's alpha-numeric serial number.

LOAD DEFAULT VALUES Push Button
: Executes and saves (when pressed) the selections entered. Changes will not be effective unless this button is pressed. THIS BUTTON MUST BE PRESSED BEFORE EXITING THE FACTORY SCREEN!

RETURN GoTo Panel
: Exits (when pressed) the sub-panel and returns the MAIN Control Panel to the screen.

NOTES:

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GENERAL

PROBLEM	CAUSE	REMEDY
Goods are unclean after processing in the washer.	1. Washer performance. 2. Condition of goods prior to processing: ware is pitted, scratched, stained, etc; type of ware material is not suitable for processing; condition and type of soil is not suitable for processing. 3. Goods not loaded correctly. 4. Duration of phase timing is too short. 5. Detergent supply has run out. 6. Detergent solution is being overused. 7. Detergent concentration is too low. 8. Detergent quality is not suitable for use. 9. Water quality is poor. 10. Water pressure is low.	1. Locate and correct washer malfunction. 2. Discontinue processing of unsuitable ware. 3. Follow correct loading procedures. 4. Review, re-program phase timing. 5. Refill, replace detergent container. 6. Review, re-program drain count. 7. Reset detergent concentration rate. 8. Change type of detergent. 9. Review, improve water quality. 10. Re-establish correct water pressure.
Goods are wet after processing.	1. Insufficient drying time. 2. Insufficient drying temperature. 3. Goods not loaded correctly. 4. Hot air not circulated through washer chamber.	1. Review, re-program drying phase timing. 2. Review, re-program drying phase temperature. 3. Follow correct loading procedures. 4. Check blower.

START-UP

PROBLEM	CAUSE	REMEDY
No power to washer.	Power supply to washer is off.	Check external power circuit.
No power to touch screen interface (Green activation indicator is not lit.)	1. If the "PWR" indicator on the microprocessor power module **is not** lit, there is an electrical component failure between the module and the washer's power distribution block. 2. If the "PWR" indicator on the microprocessor power module **is** lit, there is an electrical component failure between the module and the touch screen interface. 3. PLC fault.	1. Check the following: a. PC power switch is turned ON. b. Fuses 14F & 15F – all units. c. Fuses 29F & 30F & transformer for 240V+ units. d. Optional safety cable switch(es) in open position or faulty. e. PC power switch fault. f. Wire connection fault. g. Power filter fault. h. Power supply module fault. 2. Check the following: 6. Wire connection fault. 7. Touch screen interface module fault. 3. See Flowchart, p.2-10.
***No power when ON/OFF switch* is turned ON**. Switch body does not light (green); "CONTROL POWER IS OFF" message remains on touch screen.	1. ON/OFF switch faulty. 2. Wire connection fault.	1. Check/replace switch. 2. Check wire connections.
ON/OFF switch is turned ON. "START" push button replaces "CONTROL POWER IS OFF" message. ***Switch body does not light (green).***	Bulb faulty.	Replace bulb.
ON/OFF switch is turned ON. ***Interior light is off.***	1. Fuse blown. 2. Bulb faulty. 3. Wire connection fault.	1. Replace fuse 16F. 2. Replace bulb 3. Check wire connections
ON/OFF switch is turned ON. ***Printer (option) is off.*** Printer's status indicator is not lit.	1. Printer's ON/OFF switch is in the OFF position. 2. Fuse blown. 3. Transformer fault. 4. Wire connection fault. 5. Printer fault.	1. Turn switch ON. 2. Replace fuse 28F. 3. Check printer transformer & rectifier. 4. Check wire connections. 5. Replace printer.
ON/OFF switch is turned ON. ***'CYCLE COMPLETE" indicator at remote end is off.***	1. Fuse blown. 2. Bulb faulty. 3. Wire connection fault.	1. Replace fuse 23F. 2. Replace bulb. 3. Check wire connections.
Time/date display or programmed cycle parameters not maintained after washer was shut off.	Microprocessor battery back-up faulty.	Check BATT indicator on power supply module. If lit (red) replace back-up battery in module.

SUMP HEAT & FILL

PROBLEM	CAUSE	REMEDY
No (or insufficient) heat.	1. Steam supply to washer is off. 2. Steam supply strainer is plugged. 3. Steam supply solenoid S8-A2 to sump heating coil malfunction. 4. Steam trap malfunction. 5. Drip leg malfunction. 6. Thermocouple T1 malfunction. 7. Booster heater component malfunction. 8. Cold water entering sump.	1. Turn on steam supply. 2. Clean strainer. 3. Clean, repair, or replace. 4. Repair steam trap. 5. Repair drip leg component. 6. Replace thermocouple. 7. Repair or replace faulty component. 8. Check cold water solenoid S7-B2.
Overheating.	1. Steam supply solenoid S8-A2 to sump heating coil malfunction. 2. Thermocouple T1 malfunction. 3. Steam heating coil leak.	1. Clean, repair, or replace. 2. Replace thermocouple. 3. Repair or replace heating coil.
No (or insufficient) fill.	1. Hot water supply to washer is off. 2. Hot water supply strainer is plugged. 3. Hot water supply solenoid S8-A1 malfunction. 4. Motorized drain valve S8-A4 malfunction. 5. Low level sensor L malfunction	1. Turn on hot water supply. 2. Clean strainer. 3. Clean, repair, or replace. 4. Clean, repair, or replace. 5. Replace sensor.
Overfilling.	1. Hot water supply solenoid S8-A1 malfunction. 2. High level sensor H malfunction.	1. Clean, repair, or replace. 2. Replace sensor.

SPRAY MANIFOLDS

PROBLEM	CAUSE	REMEDY
No (or erratic) back and forth movement.	1. Movement obstructed by object(s). 2. Fuse 17F blown. 3. Manifold motor contactor 4M is defective. 4. Faulty wire connection. 5. Fault in slot 6 relay output module (B4). 6. Torque limiter slipping or defective. 7. Manifold motor defective. 8. Faulty manifold drive component in chamber.	1. Remove obstruction. 2. Replace fuse. 3. Replace contactor. 4. Check wiring connections. 5. Check connection B4. Replace module if required. 6. Adjust or replace torque limiter. 7. Replace motor. 8. Check, replace component(s).
No (or insufficient) spray.	1. Fuse 1F, 2F, 3F, 17F or 25F blown. 2. Pump S6-B2 thermal contacts (1OL) open. 3. Pump S6-B2 contactor (1M) defective. 4. Pump S6-B2 defective. 5. Fault in slot 6 relay output module (B2). 6. Manifold's bottom plugs leaking or missing. 7. Manifold hose(s) faulty. 8. Manifold spray nozzles are clogged. 9. Manifold clogged.	1. Replace fuse(s). 2. Test, reset contacts. 3. Replace contactor. 4. Repair, replace pump. 5. Check connection B2. Replace module if required. 6. Tighten, replace plugs. 7. Check, replace hose(s). 8. Clean, replace nozzles. 9. Clean out manifold.

LIQUID SUPPLIES

PROBLEM	CAUSE	REMEDY
No (or insufficient) amount of detergent or rinse aid dispensed to sump.	1. Supply level too low. 2. Dispenser flow rate too low. 3. Supply line tubing clogged, kinked, or defective. 4. Dispenser pump rollers faulty. 5. Fuse 22F blown. 6. Fault in slot 8 relay output module (A5/A6). 7. Dispenser defective.	1. Refill/change supply container. 2. Increase flow rate. 3. Check, replace tubing. 4. Check, replace rollers. 5. Replace fuse. 6. Check connections. Replace module if required. 7. Repair, replace dispenser.
Excessive amount of detergent or rinse aid dispensed to sump.	1. Dispenser flow rate too high. 2. Dispenser defective.	1. Decrease flow rate. 2. Repair, replace dispenser.

DRAINING

PROBLEM	CAUSE	REMEDY
Washer not draining properly.	1. Clogged drain screens. 2. Motorized drain valve S8-A4 malfunction. 3. Drain line obstruction. 4. Fault in slot 8 relay output module (A4).	1. Remove and clean screens. 2. Clean, repair, replace. 3. Check, flush drain line. 4. Check connections. Replace module if required.
Cold water leaking into drain line beyond drain valve.	1. Drain tempering supply solenoid S7-B4 malfunction. 2. Fault in slot 7 relay output module (B4).	1. Clean, repair, replace. 2. Check connections. Replace module if required.

DRYING

PROBLEM	CAUSE	REMEDY
No (or insufficient) heat during drying phase.	1. Programmed temperature setpoint too low. 2. Dryer steam heat supply solenoid S7-B1 malfunction. 3. Dryer steam trap malfunction. 4. Fuse(s) 4F, 5F, 6F, 17F or 25F blown. 5. Fault in slot 6 relay output module (B3). 6. Dryer blower S6-B3 thermal contacts (2OL) open 7. Dryer blower contactor (2M) defective. 8. Dryer blower S6-B3 motor defective. 9. Intake/exhaust damper(s) stuck open. 10. Temprature sensor T2 malfunction. <u>Non-vented option</u>: 1. Exhaust blower contactor (5M) defective. 2. Fault in slot 6 relay output module (B5).	1. Check, adjust setpoint. 2. Clean, repair, replace. 3. Repair steam trap. 4. Replace fuse(s). 5. Check connections. Replace module if required. 6. Test, reset contacts. 7. Replace contactor. 8. Repair, replace motor. 9. Check, adjust dampers. 10. Check, replace sensor. <u>Non-vented option</u>: 1. Replace contactor. 2. Check connections. Replace module if required.
Overheating during drying phase.	1. Programmed temperature setpoint too high. 2. Dryer blower S6-B3 thermal contacts (2OL) closed 3. Dryer blower contactor (2M) defective. 4. Fault in slot 6 relay output module (B3).	1. Check, adjust setpoint. 2. Test, reset contacts. 3. Replace contactor. 4. Check connections. Replace module if required.

MISCELLANEOUS

PROBLEM	CAUSE	REMEDY
Excessive retention of residual vapors.	1. Programmed exhaust timing setpoint too low. 2. Fuse 20F blown. 3. Exhaust damper motor S7-B6 defective. 4. Fault in slot 7 relay output module (B6). Non-vented option: 1. Fuse 20F blown. 2. Exhaust blower contactor (5M) defective. 3. Fault in slot 6 relay output module (B5).	1. Check, adjust timing setpoint. 2. Replace fuse. 3. Repair, replace motor. 4. Check connections. Replace module if required. Non-vented option: 1. Replace fuse. 2. Replace contactor. 3. Check connections. Replace module if required.
Booster heater: No (or insufficient) heat.	1. Temperature setpoint too low. 2. Steam supply solenoid S8-A3 to booster heater malfunction. 3. Stean trap malfunction. 4. Thermocouple T4 malfunction. 5. Fault in slot 8 relay output module (A3). 6. Booster heater failure.	1. Check, adjust temperature setpoint. 2. Clean, repair, replace. 3. Repair steam trap. 4. Replace thermocouple. 5. Check connections. Replace module if required. 6. Replace booster heater.
Power floor (option) does not raise.	1. Load too heavy. 2. Lifting assembly obstruction. 3. Cable disconnection. 4. Floor tilt control relay 1CR malfunction. 5. Fault in slot 6 relay output module (B7). 6. Actuator/switch assembly malfunction.	1. Adjust load. 2. Locate, remove obstruction. 3. Replace cable(s). 4. Replace control relay. 5. Check connections. Replace module if required. 6. Check, replace faulty component.
Power floor (option) does not lower.	1. Physical obstruction. 2. Floor tilt control relay 1CR malfunction. 3. Fault in slot 6 relay output module (B7). 4. Actuator/switch assembly malfunction.	1. Locate, remove obstruction. 2. Replace control relay. 3. Check connections. Replace module if required. 4. Check, replace faulty component.

NOTES

ABORT CONDITIONS

GENERAL

Should a washer problem occur, it may be detected in one of two ways:

1. Automatically: Detected by the controller, and resulting in an automatic abort condition (eg: setpoint failure.).
2. Non-Automatic: Detected by the washer operator, not the controller (eg: manifold drive malfunction).

This Trouble Analysis section will therefore be divided into two subsections:

- Automatic Detect Conditions
- Non-Automatic Detect Conditions

AUTOMATIC DETECT CONDITIONS

In the event any one of the following conditions occurs during washer operation, the processing cycle will be automatically aborted (halted), an alarm will sound, and a CYCLE ABORTED panel will be displayed identifying the condition:

Resetable:
WASH TEMPERATURE TIMEOUT
RINSE 2 TEMPERATURE TIMEOUT
DRYER TEMPERATURE TIMEOUT
WASH FILL TIMEOUT
RINSE 1 FILL TIMEOUT
RINSE 2 FILL TIMEOUT
SUMP DRAIN TIMEOUT
WASH DRAIN TIMEOUT
RINSE 1 DRAIN TIMEOUT
RINSE 2 DRAIN TIMEOUT
FLOOR POSITION FAILURE

Non-Resetable:
MULTIPLE TEMPERATURE ZONE FAILURES
DRYER TEMPERATURE ZONE FAILURE
BOOSTER TEMPERATURE ZONE FAILURE
SUMP TEMPERATURE ZONE FAILURE
RECIRCULATION PUMP MOTOR OVERLOAD
DRYER BLOWER MOTOR OVERLOAD

The CYCLE ABORTED panel will present the operator with a RESET Push Button and a load counter

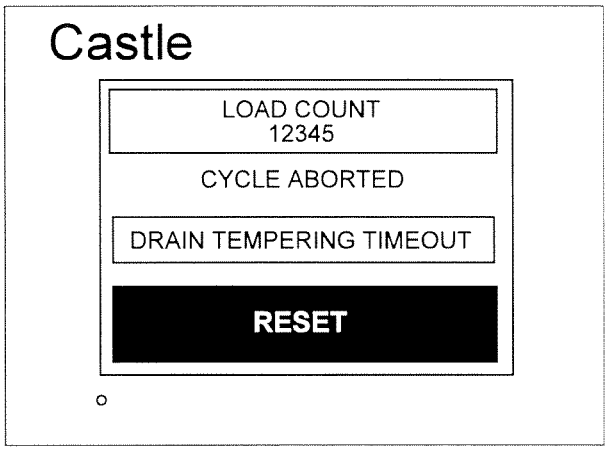


FIGURE 7-1: CYCLE ABORTED PANEL

IF A RESETABLE CYCLE ABORT CONDITION OCCURS: The operator should press the RESET Push Button. The MAIN Control Panel will appear. The operator may then press the START Push Button to attempt to restart the cycle from the beginning. If the condition persists and the CYCLE ABORTED Panel reappears, the operator should:

1. Press the RESET Push Button once again to display the MAIN Control Panel and shut off the alarm.

2. Cease washer operation by turning the CONTROL POWER ON-OFF/RESET Switch to OFF.

3. Notify qualified service personnel.

IF A NON-RESETABLE CYCLE ABORT CONDITION OCCURS: The RESET Push Button will be inoperative. The operator should:

1. Cease washer operation by turning the CONTROL POWER ON-OFF/RESET Switch to OFF. The MAIN Control panel will be displayed. The alarm will shut off.

2. Notify qualified service personnel.

NOTE: If the CONTROL POWER ON-OFF/RESET Switch is turned back ON, the CYCLE ABORTED Panel will reappear and the alarm will sound.

Analysis:

PROBLEM:
Wash Temperature Timeout
Rinse 2 Temperature Timeout

CAUSE:
1. Timeout setpoint too low.
2. Steam supply to sump is restricted.
3. Sump condensate line is restricted.
4. Sump thermocouple (T1) malfunction.

REMEDY:
1. Check appropriate timeout setpoint at Service Timers sub-panel (Factory set: 600 seconds). Reprogram if required.
2. Check/repair/replace the following:
   - House source (steam supply)
   - Ball valve
   - Strainer
   - Solenoid S8-A2
   - Condensate drip leg components.
3. Check/repair/replace sump condensate line components.
4. Check/repair/replace the following:
   - Thermocouple (T1)
   - Com Line (T1)

PROBLEM:
Dryer Temperature Timeout

CAUSE:
1. Dryer heater steam leak.
2. Dryer blower malfunction.
3. Exhaust damper open.
4. Intake damper open.
5. *(Non-vented option only)* Exhaust/condenser system malfunction.
6. Timeout setpoint too low.
7. Steam supply to dryer is restricted.
8. Dryer condensate line is restricted.
9. Dryer thermocouple (T2) malfunction.

REMEDY:
1. Check, repair, replace dryer heater
2. Check/repair/replace the following:
   - Dryer blower motor. If not running, check the following:
     - Fuses (4F,5F,6F) & wiring (control box).
     - Dryer blower contactor/starter.
3. Check/repair/replace the exhaust damper components.
4. Check/repair/replace the intake damper components.
5. Check/repair/replace the following:
   - Exhaust damper motor. If not running, check the following:
     - Fuse (8F) & wiring (control box).
     - Exhaust contactor.
6. Check "DRYER TEMP TIMEOUT" setpoint at Service Timers sub-panel (Factory set: 600 seconds). Reprogram if required.
7. Check/repair/replace the following:
   - House source (steam supply)
   - Ball valve
   - Strainer
   - Solenoid S7-B1
8. Check/repair/replace dryer heater condensate line components.
9. Check/repair/replace the following:
   - Thermocouple (T2)
   - Com Line (T2)

PROBLEM:
Wash Fill Timeout
Rinse 1 Fill Timeout
Rinse 2 Fill Timeout

CAUSE:
1. Timeout setpoint too low.
2. Sump leak.
3. Hot water supply to sump is restricted.
4. Drain line open.
5. High level (H) system malfunction.

REMEDY:
1. Check "SUMP FILL TIMEOUT" setpoint at Service Timers sub-panel (Factory set: 280 seconds). Reprogram if required.
2. Check sump integrity at welds/fittings.
3. Check/repair/replace the following:
   - House source (hot water supply)
   - Ball valve
   - Strainer
   - Solenoid S8-A1
4. Check/repair/replace drain solenoid valve S8-A4.
5. Check/repair/replace the following:
   - Sump level control (control box)
   - High level probe (H)
   - Com Line (H)

PROBLEM:
Sump Drain Timeout
Wash Drain Timeout
Rinse 1 Drain Timeout
Rinse 2 Drain Timeout

CAUSE:
1. Timeout setpoint too low.
2. Drain line not closed properly.

REMEDY:
1. Check "SUMP DRAIN TIME" timeout setpoint at Service Timers sub-panel (Factory set: 180 seconds). Reprogram if required.
2. Check/repair/replace drain solenoid valve S8-A4.

PROBLEM: *(Power Floor Tilt Option)*
Floor Position Failure (>7 secs)

CAUSE:
1. Load too heavy.
2. Lifting system jam.
3. Floor tilt control relay malfunction.
4. Limit switch malfunction.
5. Actuator malfunction.

REMEDY:
1. Load weight should not exceed 350 lbs (159 kg).
2. Check for obstructions. Clear if required.
3. Check/replace the following:
   - Fuse (24F) and wiring (control box)
   - Control relays (1CR,2CR,3CR)
4. Check/repair/replace the following:
   - Limit switch positions.
   - Limit switches.
   - Com lines.
5. Check/repair/replace Actuator.

PROBLEM:
Multiple Temperature Zone Failures

CAUSE:
More than one thermocouple (T1,T2,T4) failure.

REMEDY:
Check/repair/replace all thermocouples (T1,T2, T4) and related com lines.

PROBLEM:
Sump Temperature Zone Failure

CAUSE:
Thermocouple T1 failure.

REMEDY:
Check/repair/replace Thermocouple T1 and related com line.

PROBLEM:
Dryer Temperature Zone Failure

CAUSE:
Thermocouple T2 failure.

REMEDY:
Check/repair/replace Thermocouple T2 and related com line.

PROBLEM:
Booster Temperature Zone Failure

CAUSE:
Thermocouple T4 failure.

REMEDY:
Check/repair/replace Thermocouple T4 and related com line.

PROBLEM:
Recirculation Pump Motor Overload.

CAUSE:
1. Overload relay (for 1M) tripped.
2. Pump motor malfunction.
3. Overload relay (for 1M) faulty.

REMEDY:
1. Push to reset (blue stem)
2. Check/repair/replace pump motor.
3. Replace overload relay.

Analysis continued...

PROBLEM:
Dryer Blower Motor Overload.

CAUSE:
4. Overload relay (for 2M) tripped.
5. Blower motor malfunction.
6. Overload relay (for 2M) faulty.

REMEDY:
4. Push to reset (blue stem)
5. Check/repair/replace blower motor.
6. Replace overload relay.

NON-AUTOMATIC DETECT CONDITIONS

PROBLEM:
No power to washer.

CAUSE:
Power supply to washer is off.

REMEDY:
Check external power supply circuit.

PROBLEM:
No power to PLC.

CAUSE:
1. Faulty transformer circuit *(For 240V units and above).*
2. Fuse (14F & 15F) blown.
3. Emergency stop cable switch open *(For units equipped with this option).*
4. PC power switch faulty.
5. Power filter assembly faulty.
6. PC power module faulty.

REMEDY:
1. Check/replace the following:
   - Transformer fuses (29F & 30F) and wire connections.
   - Transformer
2. Check/replace fuses.
3. Check cable switch (and wire connections). If switch is open, manually close.
4. Check PC power switch (and wire connections). Replace switch if required.
5. Check power filter (and wire connections). Replace power filter if required.
6. Check PC power module (and wire connections). Replace module if required.

PROBLEM:
PLC Power Module: When turned on - PWR indicator steady, OK indicator lights (PLC boot-up), RUN indicator does not light.

CAUSE:
1. Acquired error in program.
2. CPU chip faulty.
3. CPU module (Slot 1) faulty.

REMEDY:
1. Switch off PLC. Pull CPU chip. Re-insert CPU chip. Switch PLC back on.
2. Replace CPU chip.
3. Replace CPU module.

PROBLEM:
PLC Power Module: BATT indicator (red) is on.

CAUSE:
Battery backup failure.

REMEDY:
Replace the battery.

PROBLEM:
PLC is ON – Touch Screen Interface does not activate (Activation Indicator not lit.).

CAUSE:
1. 24VDC supply fuse (27F) blown.
2. Touch screen interface faulty.

REMEDY:
1. Check/replace fuse(and wire connections).
2. Replace touch screen interface.

ADJUSTMENTS

MANIFOLD DRIVE TORQUE LIMITER

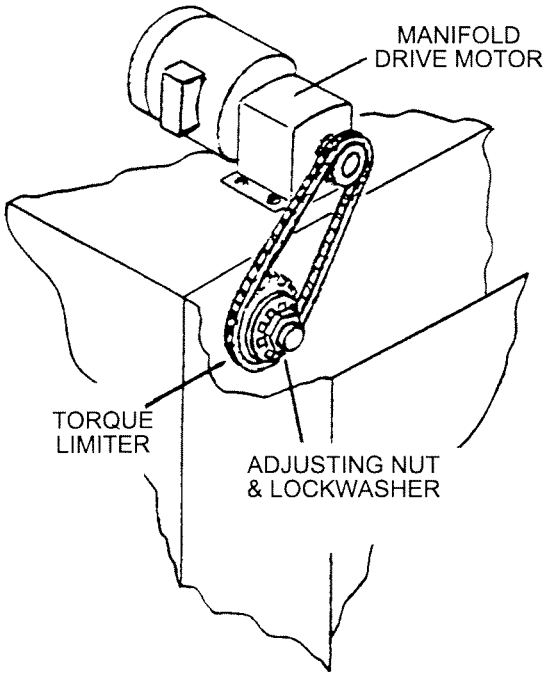
The procedure described below may be used to check/adjust the torque limiter on the spray manifold drive assembly.

The torque limiter is a safety device connecting the manifold drive motor to the spray manifold drive shaft. The function of this device is to disengage the shaft from the motor any time the back and forth movement of the manifold assembly becomes obstructed.

When a torque limiter is properly adjusted, the movement of the manifold assembly can be stopped by hand without the use of excessive force.

NOTE

Testing the effectiveness of a torque limiter may require the services of two personnel. Adjusting a torque limiter requires one.



TORQUE LIMITER

To Check:

1. Manually engage (depress and hold) the manifold drive motor contactor (4M) in the washer's control box. *The spray manifold will begin to travel back and forth.*

2. Test the effectiveness of the torque limiter by attempting to halt movement of the manifold by hand.

   - If excessive force must be applied, the torque limiter is set too tight.

   - If the application of too little force stops the manifold movement, the torque limiter is not tight enough.

To Adjust:

1. Release (disengage) the manifold drive motor contactor.

2. If required, locate and straighten the lockwasher tab to free the torque limiter's adjusting nut.

3. Loosen or tighten the adjusting nut (by ¼" turns) as required.

4. Test the new adjustments as described above in the "To Check" procedure.

5. Repeat Steps 2 through 4 until the torque limiter is properly adjusted. Then secure the adjusting nut in place by bending over one of the lockwasher's tabs.

MANIFOLD DRIVE CHAIN TENSION

The procedure described below may be used to adjust the tension of a spray manifold's drive chain.

1. Ensure that the manifold drive chains, shafts, and sprokets are in good condition. Replace any worn components.

2. Check that the manifold push bar is aligned properly straight across from side to side.

3. Loosen the idler sproket lock nut slightly. Locknut is located on the back side of the idler bracket from the sprocket.

4. Loosen the lock nut on the tension adjustment bolt.

5. Tighten the bolt thus pushing back the idler sprocket until there is approx. 2" of up and down play at the midpoint of the chain between the drive sprocket and the idler sprocket.

6. Tighten the idler sprocket lock nut and recheck tension. Re-adjust as needed.

7. Tighten lock nut on tension adjustment bolt.

DETERGENT AND RINSE PUMP TIMES

1. Determine the sump capacity of the washer. Standard sump capacities are listed below by machine model number:

   76001 – 45 gallons
   76002 – 50 gallons
   76003 – 55 gallons
   76004 – 60 gallons
   76005 – 65 gallons

2. Determine the concentration in ounces per gallon as reccomended by the detergent or rinse aid manufacturer for the hardness of the water used by the account.

3. Use the following formula to determine run time of pump in seconds to inject desired amount of detergent:

$$\frac{\text{Sump Capacity (gal.) X Concentration (oz./gal.)}}{\text{.14oz/sec}}$$

EXAMPLE:

Sump Capacity – 65 gallons
Recommended Concentration - .25oz./gal.

$$\frac{\text{65 gallons X .25 oz./gal.}}{\text{.14oz./sec.}}$$

= 116 seconds